Railway Age

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Automatic Stops and Yard Limits

THE Bureau of Safety of the Interstate Commerce Commission has reported on a collision (Bethlehem, Pa., September 27) without recommending the use of an automatic train stop—though a stop "properly installed and maintained" would have prevented it. That is to say, the case was one, according to the Bureau's report, where the whole fault was the failure of the engineman and the fireman seasonably to see and obey a visual roadside signal which rightly fulfilled its function. In this country, as in England, the "body of law"—or of precedent or recommendations—which is to be the guide of the government in what it will require of the railroads is, no doubt, to be made up largely of opinions, like this, in individual examples; and, therefore, it is well to make note of each case. And this is one where the decision is eminently proper. An officer of the road, testifying at the investigation, asserted that the movement of the train over the bridge was a yard movement, which seems a reasonable classification, nothing being said as to block working between the two towers. Yard movements are normally made at limited speeds. Either with or without manual block working, the locality is one where very moderate speed for all trains seems appropriate; and in the nature of the case there must be many situations where, because of what are essentially yard conditions, automatic train control is not economically justified.

Pennsylvania Pays 7 Per Cent

THE announcement that the directors of the Pennsylvania have raised the dividend rate from 6 per cent to 7 per cent annually is one of the most pleasing items of news that has developed in the transportation industry thus far this year. Of course, the Pennsylvania stockholders, now some 140,000 in number, will be the greatest beneficiaries because the increase in the annual dividend disbursement will mean about $5,000,000 to them. It will mean even more than that if the road later decides to sell an issue of stock. The importance of the increase in the dividend rate cannot, however, be measured in dollars; it must be measured by its significance. The Pennsylvania has been paying 6 per cent dividends since 1900, except in 1906 and 1907 when the rate was for a while 7 per cent and except from May, 1921, to August, 1922, when there were six quarters in which the dividends were at the annual rate of only 4 per cent. When in October, 1922, the quarterly dividend was restored to 1½ per cent, or 6 per cent annually, there was comment on all sides about the marked recovery from the adversities of federal control, about the favorable regard in which the property was held by the public, about the management's conservative financial policy and about many other good things for which this great company has been noted. It would serve no particular use to repeat all these things over again, but it is worth while remarking that the Pennsylvania is showing quite satisfactory net earnings, that it is rendering a considerably more satisfactory transportation service, and what is of greatest importance for the future, that it has again taken up its program of improvement—witness notably the electrification now under way of the line between Philadelphia and Chester. Another point is that the company is willing to let its stockholders participate in its improved fortunes which, if nothing more, will help in making all railway securities more popular with the investing public. The Pennsylvania advertising says that the road carries more freight and moves more passengers than any other railroad in America. For that reason, whatever it does is important; because the property is, to a great extent, an index of the conditions applying to all railroads.

Only Two Bids

THE Illinois Central has sold its $4,665,000 4½ per cent equipment trust securities, series N, to Halsey, Stuart & Co., of Chicago, at a price of 98.815. This house offered the higher of two bids. The other one made by A. B. Leach & Co. and Kountze Brothers was 98.643. The Interstate Commerce Commission had set 98.43 as a minimum price. This is the issue that the Illinois Central had arranged to sell to Kuhn, Loeb & Co. at 98.43. The commission, however, apparently decided that the time had come for a show-down on the question of competitive bidding for railway securities and refused to authorize the sale. It said it would authorize a sale after competitive bidding with that price as a minimum, but that if the Illinois Central still thought that the issue should be sold to Kuhn, Loeb & Co. without competitive bidding, the carrier would have to get a price of 99.51. Apparently Kuhn, Loeb & Co. was not sufficiently eager to get the business to pay such a fancy price and so the Illinois Central called for competitive bids. The commission put itself on record in the Western Maryland equipment trust case in June as believing that the sale of equipment trust securities by competitive bidding "will tend to widen their market and thus produce capital more cheaply for the issuing railroad." In the case of the Illinois Central equipment trust securities it is true that the capital will be produced more cheaply for the railroad because the successful Halsey, Stuart & Co. price of 98,815 is 0.385 points higher than the Kuhn, Loeb price which was rejected. This means that the Illinois Central will secure a saving of about $18,000. No doubt much will be made of this and many will say that the commission is right in insisting on competitive bidding. But there is another side to it. There were only two bids. This number is so small as to make one consider the situation in another light. It is true that of the railway equipment trust issues passed upon by the Interstate Commerce Commission in the first six months of 1926, Kuhn, Loeb & Co. and J. P. Morgan & Co. participated in no less than 86 per cent on a value basis.

But it is also true that the equipment trust issues of this half-year period were sold through no less than 13 houses, inclusive of the two leaders, and the list does not include either one of the two houses which submitted bids for the Illinois Central issue. The fact that only two bids were offered does not seem to indicate any marked tendency towards a widening of the market. And may it not be significant that of the 13 houses mentioned not one offered a bid for the Illinois Central certificates?

Cast Thy Bread Upon the Waters

BRIDGE engineers have frequently been critical of the manner in which increases in the weights and dimensions of rolling stock have been carried out. In too many cases, they contend, no effort has been made to learn from them what effect such greater sizes and weights would have on established clearances and carrying capacities of bridges until after the purchase of the new equipment has been consummated. There is merit in this criticism. The objection, however, applies only to the method. It cannot be raised with respect to the considerations which have prompted the progressive development of railway equipment. It is true that the transition could have been carried out with greater economy if the bridge engineer or the chief engineer had been consulted, but there is no denying that American railways owe their present efficiency in a large measure to the fact that larger equipment has made heavier carloads and trainloads possible. That the bridge engineer has also profited by this increase in the size of equipment becomes apparent when opportunity is afforded to point out the advantages he enjoys in carrying out his work in contrast with the limitations imposed on the bridge engineer of English railroads. For example, a recent issue of the Railway Gazette (London) contains an illustrated article describing the extraordinary measures necessary for the transporting of two girders, one 106 ft. long weighing 36 tons, and another 86 ft. long weighing 46 tons. This movement required the use of special "wagons," moved in a special train limited to a speed of 15 miles an hour "and care had, of course, to be exercised in starting and stopping." If such a ceremonial procession were the order of the day in this country every time the bridge engineer had a 50-ton bridge member to move, he would be exceedingly unpopular with the operating department.

Shop Machinery Depreciation

FROM time to time the question of proper depreciation of machine tools and other machinery is brought up for discussion and when opinions are expressed by mechanical department officers, they are usually to the effect that such depreciation as is now charged in the maintenance of equipment account is entirely too low to represent the actual rate at which these tools are losing their service value. A general discussion of the subject is difficult, however, because the depreciation charges shown in the statistics of the I. C. C. cannot be related to the capital value of the shop machinery as it is carried on the books of the railroads.

In the recent discussion of this subject by M. A. Hall, superintendent of machinery, Kansas City Southern, in his paper before the International Railway General Foremen's Association convention, an abstract of which was published in the October 2 issue of the *Railway Age*, he directed attention to the suggestion of one superintendent of motive power that 10 per cent per year depreciation should be charged on production tools and 5 per cent on non-production tools such as those in use at engine terminals. In considering such a suggestion probably the most important step is to determine how it compares with present practice. For the reasons already stated, this cannot be done directly. What may be termed a qualitative, if not an accurate quantitative comparison, may be made indirectly, however. It is probable that the ratio of the expenditures for keeping shop machinery in repair to the total investment in shop machinery is, if anything, less than the ratio of the expenditures for keeping steam locomotives in repair to the total investment in steam locomotives. If this be true, some measure of the relative depreciation rates in the two cases may be obtained by comparing the ratio of the amount charged to machinery depreciation (which includes retirement charges) to the expenditure of shop machinery repairs with the ratio of the combined amounts charged to steam locomotive depreciation and retirements to the expenditure for steam locomotive repairs. In the table are shown the data for such a comparison, covering the last three years for which they are available.

	1923	1924	1925
Shop machinery repairs.....	$27,950,000	$24,445,000	$27,590,000
Shop machinery depreciation..	347,000	358,000	655,000
Depreciation, per cent of repairs	1.3	1.5	2.4
Steam locomotive repairs.....	$559,281,000	$465,132,000	$456,533,000
Steam locomotive depreciation and retirements.....	51,260,000	54,301,000	57,285,000
Depreciation and retirements, per cent of retirements....	9.2	11.8	12.5

It will be seen that while the ratio of the combined locomotive depreciation and retirement accounts, which together represent the total charges for each year on account of the retirement of old locomotives, progressed from 9.2 per cent to 12.5 per cent, the ratio in the case of shop machinery advanced from 1.3 to 2.4 per cent. It is evident that a far less liberal policy holds in the matter of depreciation and retirement of machine tools and other shop machinery than in the case of the depreciation and retirement of steam locomotives, and that the rate is far from equalling the suggested 5 and 10 per cent.

Without a thorough study of the various questions which enter into the establishment of a definite depreciation rate, it would be rash to attempt to say just what depreciation rate would build up an adequate shop machinery retirement reserve. The opinion may be ventured, however, that the disparity between the ratios of depreciation and repair expenditures in the case of shop machinery and steam locomotives is much greater than it should be if shop production capacity and efficiency is to keep pace with the growth in capacity and efficiency of steam motive power.

From a purely accounting standpoint, it is of no great importance whether the amounts charged to the depreciation account represent the application of a percentage rate of depreciation each year during the life of the tools and machinery, or whether it represents lump sum retirement charges to cover the equipment retired each year. From the standpoint of the physical condition of the property, however, is not the application of a depreciation rate, carefully established to represent the actual facts as to obsolescence and other decreases in value, likely to encourage a more liberal policy of actual retirements and replacements? It might also be suggested that although such a policy would undoubtedly increase materially the annual charges to shop machinery depreciation, it might not necessarily increase the combined charges for repairs and depreciation. Excessive repair expenditures to keep in service ancient tools are not entirely unknown. The impetus to more adequate replacements made possible by the systematic application of reasonable depreciation rates would oftentimes save these uneconomical expenditures.

Foolish Opposition to Progress

THE statistics given in two bulletins of the Interstate Commerce Commission which have just been made public, and certain developments that are occurring for which railway labor leaders are responsible, strikingly illustrate what a want of relationship there often is between actual facts and the premises upon which arguments are based for policies advocated ostensibly in the interest of railway employees.

One of the bulletins alluded to is that giving the operating results of the railways in August, 1926. It shows that in that month the average freight train of the Class I roads was the longest and carried more freight than in any previous month in history. It contained 47.2 cars and carried 820 tons of freight. The largest number of cars per average train in any previous month was 46.3, which record was made in July, 1926, and the largest number of tons of freight ever hauled in the average train of any previous month was 796, which record was made in August, 1925. The average speed of the average train in August, 1926, was 12 miles an hour, and was sufficient to cause it to make a new high record of tons moved one mile hourly per average train.

The principal product of the railroads is freight transportation. Increases in the number of ton-miles produced per hour per train are their contribution to the increasing efficiency of mass production which has made it possible for the industry of the United States to pay the highest wages in proportion to their purchasing power in the world. The conductors and trainmen are now seeking an advance in wages. Only the present large output of ton-miles per train per hour of our railways makes it possible for them to pay their present wages, while charging their present rates. Nevertheless, the same labor unions of employees that are now seeking advances in wages are simultaneously trying to penalize or prevent the operation of long trains by advocating legislation either to require the railways to employ more brakemen on long trains or to prohibit them from operating trains containing more than a specified number of cars.

The principal argument advanced in favor of train crew and train limit legislation is that increases in the length of trains enhance the hazards of railway operation and employment. It is claimed especially that they increase accidents to trainmen. This brings us to the facts disclosed by the other bulletin of the Interstate Commerce Commission above alluded to which has just been received. This is the commission's annual accident bulletin for the entire year 1925.

It was recently shown in an editorial in the *Railway Age* that the commission's accident bulletin for 1924 demonstrated that while year by year, up to and including that year, the average length of freight trains had been increasing, it was also true that year by year accidents to trainmen had been declining. The freight business handled by the railways in 1925 was greater than in any earlier year in history, and yet the commission's statistics for 1925 show that both absolutely and relatively the number of fatal accidents to freight trainmen in that year was smaller than in 1924 or any previous since 1912. The number of freight trainmen killed was 305, as compared with 313 in 1924 and 1,006 in 1913. The number of freight trainmen fatally injured per 10 million train miles in 1925 was 5.1, as compared with 5.3 in 1924 and 15.6 in 1913. The number of trainmen killed per 1,000 employed in 1925 was 2, as compared with the same number in 1924 and 4.4 in 1916, 4.6 in 1917 and 5 in 1918—these being the three earliest years for which this figure is given by the commission.

The average freight train in 1925 was longer than in any previous year. It represented an increase in efficiency which was gained by the railways by large capital expenditures for larger locomotives and other improvements and by adaptation of operating methods to these improved physical facilities. By reducing the unit cost of operation it benefited all parties concerned by making it possible for the railways to pay higher average wages, to charge lower average rates and to earn a larger net return than otherwise would have been possible. It did not increase accidents, but contributed to increasing safety of operation.

When will labor union leaders quit trying to penalize or prevent improvements in the physical plant and methods used in production which it can easily be demonstrated by unanswerable evidence are in the interest of all concerned, including the members of their own organizations?

Rebuilt Versus New Pile Drivers

MANY operations conducted by railroad forces in the maintenance and construction of roadway and roadway structures involve the use of power equipment of various kinds, and for many years the employment of a locomotive to move these machines was deemed an unavoidable requisite to their use. The advent of the locomotive crane and its introduction on the railroads some 15 or more years ago opened the way to hitherto undreamed of economies. The adaptability of these machines to various types of service has led to their use for a wide variety of purposes, while their mobility has afforded frequent opportunity for avoiding the use of a locomotive in operations in which it had previously been considered a necessity.

The popularity of the locomotive crane was rapidly established. It superseded the bridge derrick car of the type used on the railroads for many classes of bridge erection, but its advent had still another effect. It caused maintenance of way and construction officers to study the opportunities for eliminating the locomotive in the handling of other forms of work equipment, notably the pile driver.

Self-propelled pile drivers have been on the market for a considerable number of years, and many railroads have purchased them, but like any other piece of highly specialized equipment, a modern pile driver represents an investment of considerable money. Aside from the cost, however, the purchase of a pile driver introduces a problem not encountered when authority is requested for the acquisition of a locomotive crane. In general, locomotive cranes have been purchased as an added piece of equipment designed to do work which had been done by hand or with much more primitive forms of machinery. The purchase of a pile driver, on the other hand, generally implies the replacement of an old machine which is still reasonably serviceable or can be made so at relatively small expense but which lacks the self-propelling feature embodied in the new equipment which it is desired to purchase.

This obstacle has led to the adoption of several expedients. There are instances where railroads have undertaken the design and construction of self-propelling drivers with their own organizations, but such projects lie so far outside the usual province of the railway engineer and encounter so many obstacles that it has

not been attempted frequently and has succeeded even less often. On the other hand, the fact that an old pile driver may be a thoroughly effective machine except for the lack of the self-propelling machinery has frequently given rise to the suggestion that the engineering and mechanical officers collaborate in the modernizing of the equipment. Experience shows that this plan involves many difficulties, and it is seriously to be questioned whether the results to be obtained in this way can be at all commensurate with those obtained by the staff of experts in the employ of a manufacturer specializing in equipment of this kind.

The operating economies to be obtained as the result of the substitution of a modern piece of equipment for one of a less efficient type should be capable of reasonably accurate determination. Having established the value of such economies, it should not be a difficult task to determine whether or not the investment in a new piece of equipment and the retirement of an old one can be justified. Investigations pursued along this line should, in many cases, prove more profitable than efforts to salvage obsolete equipment.

What of Railroad Capacity?

SOME interesting and significant views regarding the transportation situation that might develop if this country should again become involved in war are set forth by Major Edwin C. Kelton of the Corps of Engineers, United States Army, in an article which is published elsewhere in this issue.

Major Kelton's article is especially interesting at this time because it expresses from a military point of view apprehension regarding certain existing conditions and tendencies which some students of transportation already had begun to fear without having given any thought to their possible consequences in case of war.

The country should be provided with transportation capacity, not only in proportion to the probable traffic in time of peace, but with some regard to the easily conceivable possibilities of both peace and war. Two great changes in economic conditions have occurred within recent years that should be taken into account in considering the amount of surplus capacity the railroads should maintain. Major Kelton mentions both of these.

First, inventories of all kinds have been greatly reduced. This has been done because increases in the speed and dependability of railroad freight service have made it possible and in reliance upon a continuance of this speed and dependability of service. In these circumstances, the results of a growth of traffic in excess of the expansion of the railways, causing an actual shortage of railroad service, probably would be more serious than the consequences of car shortages in the past. Throughout the last quarter of a century when "car shortages" came business concerns all along the line, from purchasers of raw materials to retail merchants, had large inventories upon which they could draw. If with inventories reduced to their present basis, they should awaken some day to find themselves confronted with a shortage of transportation they would not be able to continue, as in the past, to carry on business as usual by drawing upon their inventories. Confronted with this situation they would raise a clamor against the railways and begin sending orders in every direction, which would increase the shortage of transportation, and, in consequence, intensify the clamor against the railways.

Second, while business concerns have been reducing their inventories, the railways, as Major Kelton points out, have not been increasing their physical capacity as much as the improvement in their service may seem to show. Before the war there was a great lack of co-operation between the railways themselves, and between them and the shippers and receivers of freight, in the handling of freight cars. The centralization of the control of car distribution in the Car Service Division, the co-operation between railways and shippers brought about by the organization of the Regional Shippers' Advisory Boards and the reduction of the amount of bad order equipment have taken up much of the slack which previously existed. No doubt there is still slack that can be taken up, but that which has been taken up already cannot be taken up again. Formerly the car shortages reported were largely due to the fact that, owing to faulty distribution, some roads had allowed more loaded cars to accumulate on their lines than they would have needed if they had been handling cars with maximum practicable efficiency, and that in consequence other roads needed cars that the former roads had. The great improvement in the handling of cars within recent years has increased the apparent car supply. This naturally has encouraged the railways to reduce their purchases of cars. The result is that the demands of traffic have been steadily gaining upon the available supply of equipment. On October 15 the surplus of cars in serviceable condition reported was only 87,000, as compared with 131,000 on the corresponding date in 1925. This was less than one-half of the number of freight cars being loaded daily.

Do the facts given indicate that, having in mind merely the probable and possible development of peace time, the railways are now handling traffic with a very narrow margin of safety? Probably they have passed the peak of this year's freight business. But coal business is a large part of total traffic. Partly owing to a temporary export business the supply of surplus coal cars has been almost exhausted. Meantime, the question whether there will be a strike in the union coal mines on April 1 is looming up, and until it is settled there is likely to be an unusually large movement of coal for domestic storage. Indications of future general business are, as usual, somewhat conflicting, but on the whole are favorable to a continuance of more than normal business activity.

The situation indicates the desirability of real study on behalf of the railways as a whole of the question whether their freight carrying capacity is being increased as much as the probable demands of peace time traffic warrant. And now comes Major Kelton, who, in the office of the Assistant Secretary of War, has made a special study of the railroads as a part of our means of national defense, and, reviewing the entire transportation situation, asks business men and railroad officers to consider what would happen under existing conditions if the country should suddenly become involved in war and the government should become the largest shipper.

The railways buy equipment and improve their permanent properties individually. But they render service, are regulated and are commended and criticised by the public, largely as a single system. It was "the railroads" that it was claimed had "broken down" in 1917. It is "the railroads" that are commended for the good service being rendered now and looked to for its continuance. One of the most constructive things "the railroads" ever did was to meet in the spring of 1923 and concertedly adopt a program for providing the public with adequate transportation service. They now from time to time, through the Car Service Division, and with the co-operation of the shippers' boards, make surveys of prospective traffic. Would it not be feasible

and wise for them periodically to have boards or committees representing all of them make studies to determine whether railroad facilities as a whole and of different kinds are being increased enough to cope with all the probable demands of traffic, and, if not, what should be done about the matter?

It is vital to the future welfare of American railroads that they shall individually and co-operatively make every reasonable effort to keep themselves prepared at all times to handle all available traffic satisfactorily and that in doing so, they shall have the support of the Interstate Commerce Commission. Present business and transportation conditions seem to make frank and intelligent consideration of what expansion of railroad capacity is needed and of where it is needed extremely desirable.

A Railroad President's Opinion

FROM a humanitarian standpoint none will dispute the value of the work that has been done on American railroads in the reduction of accidents. But there may be among railroad executives and operating officers those who are skeptical of its commercial value.

That "safety does pay" is the opinion of W. A. McGonagle, president, Duluth, Missabe & Northern, who, during an address before the Steam Railroad Section of the National Safety Council said "that outside of the credit you will receive for carrying out humanitarian ideas there also comes the assurance that it pays in hard dollars to save the lives and limbs of our employees. Too many of us in the past have hesitated as we comprehended the cost of organizing and maintaining safety departments, but my own experience has fully satisfied me that all the expenditures we have made in this particular department of the D. M. & N. were warranted and that the investment made has been a paying one, even measured commercially, and we are in position to recommend to all other executives the organization and permanent maintenance of a strong and effective safety department which, from our own experience, we know will tend to unite in a bond of fellowship all the officers and working men of your companies."

Mr. McGonagle, in commenting on the effect of safety work on the road of which he is president cited three significant examples; the reduction in the total number of accidents from 607 in 1917 to 75 in 1925; the fact that the Missabe has operated from December, 1923, a period of nearly three years, without a single death or major injury to any employee or passenger and, that in the company's car shops at Proctor, Minn., which employ an average of 216 men and repair an average of 1,898 bad order cars a month, not a single accident, resulting in the loss of one day's time or more, has occurred in over eight years. In concluding his remarks he said: "Our company has been repaid many times over for the cost of organizing and developing safety work on our railroad; it has paid me in peace of mind to assist in working out an effective system for preventing accidents to our employees, and I am much prouder of our record in saving human lives and limbs than I am of the splendid low operating cost we have attained, much of which is the result of the loyal and faithful co-operation of our officers and men."

At the 1925 Safety Congress in Cleveland, Carl R. Gray, president, of the Union Pacific System, expressed the opinion that the ultimate success of safety work must depend not only upon the efforts of those in the ranks who are directly engaged in this work but also upon the wholehearted co-operation and personal interest of the executives and general officers of the railroads as well. J. T. Loree, vice-president and general manager of the Delaware & Hudson, showed his personal interest in safety work by his presence at this year's Safety Congress where he talked before the Steam Railroad Section on safety from the vice-president's standpoint.

There may be some significance in the fact that when the E. H. Harriman gold medal was awarded for the best record in accident prevention among American railroads in 1924 it went to the Union Pacific System—with honorable mention of the Duluth, Missabe & Northern and the Delaware & Hudson. It would seem that the personal interest and support of the executives of these three roads has resulted in outstanding success in safety work and that the enviable operating records of each would bear out the slogan that "Safety Pays."

Books and Articles of Special Interest to Railroaders

(Compiled by Elizabeth Cullen, Reference Librarian, Bureau of Railway Economics, Washington, D. C.)

Books and Pamphlets

Decisions, by U. S. Interstate Commerce Commission. Vol. 101, June-July, 1925, 909 p. Vol. 102, July-October, 1925, 929 p. Pub. by Govt. Print. Off., Washington, D. C., $2.25 per vol.

Railroad Consolidation. Report by Special Committee of *Analysis Thereof,* by Monroe E. Miller. Nine types of control apparatus described. 7 p. Pub. by Author, Washington, D. C.

Railroad Consolidation. Report by Specitl Committee of Commerce and Marine Commission appointed by American Bankers' Association. 15 p. Pub. by American Bankers' Association, New York City.

Union Pacific System. An analysis giving mileage, capitalization, and other data. 4 p. Pub. by Hodenpyl Hardy Securities Corporation, New York City. *Apply.*

Valuation Reports July-November, 1925, by U. S. Interstate Commerce Commission. Vol. 103 of its Decisions, giving valuations of 68 railroads. 847 p. Pub. by Govt. Print. Off., Washington, D. C. $2.25.

Periodical Articles

Apprentice Training, by Charles F. Bailey. Methods used as Newport News Shipbuilding and Drydock Co. Mechanical Engineering, November, 1926, p. 1110-1111.

The Deadly Grade Crossing. How New York State and Its Railroads Are Spending $300,000,000 *to Do Away With Accidents,* by Howard A. Shiebler. American Review of Reviews, November, 1926, p. 519-522.

French Railway Rates Comparatively Low, by Raymond Davis. Includes table showing first, second and third class rates for specified distances in France. Germany and Switzerland. Commerce Reports, November 1, 1926, p. 301.

Preliminary Power Rating and Tractive Force of Modern Locomotives, by R. Eksergian. Mechanical Engineering, November, 1926, p. 1095-1103.

Railroads Will Require $787,000,000 *New Investment Annually in Next Ten Years,* by Lee G. Lauck. Enumerates some of the reasons this sum will be required. Annalist, October 29, 1926, p. 563-564.

The Tractive Resistance of Electric Locomotives and Cars, by W. J. Davis, Jr. Train resistance formulas for locomotive and motor car service, p. 701-707. General Electric Review, Oct., 1926, p. 685-707.

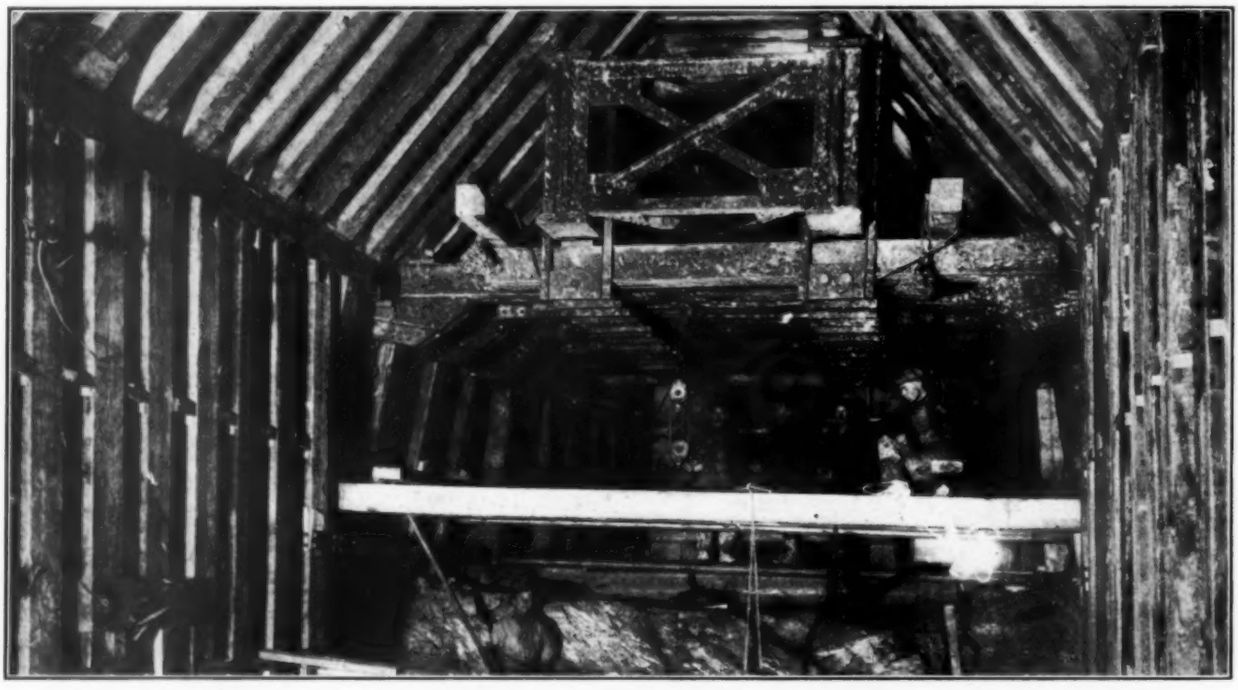
The Development of Transportation, by F. G. Jonah. Illustrated. Military Engineer, Sept.-Oct., 1926, p. 363-368.

Work on Moffat Tunnel Forging Ahead

Completion of project in 1927 is anticipated in spite of difficulties encountered during the past year

By Clifford A. Betts
Office Engineer, Moffat Tunnel Commission, Denver, Colo.

IN spite of handicaps imposed by nature, the Moffat tunnel through the Continental divide 50 miles west of Denver, Colo., is rapidly nearing completion. The water tunnel headings were 2,520 ft. apart on October 1, the railroad tunnel headings were 3,810 ft. apart, and the operations for the enlargement of the single-track railroad tunnel to the full size of 16 ft. by 24 ft., were 9,093 ft. apart. With a total length of tunnel of 6.1 miles, this means that the 8-ft. by 8-ft. water tunnel is 92 per cent finished, and the railroad tunnel over 75 per cent done. East of the apex where the 0.3 per cent ascending grade from the east portal meets the 0.9 per cent and 0.8 per cent ascending grades from the west portal, the railroad tunnel has been ballasted ready for the track. A tile drain placed beneath the ballast will carry off whatever water collects east of the apex. However, practically all of the water flows have occurred west of the high point and will be carried out through the west portal in concrete gutters which serve also as the footings for the posts of the tunnel timbering. The apex is 13,614 ft. in from the east portal and 41 ft. higher. A comprehensive article covering the reasons for the construction of this tunnel and presenting an account of the tunneling procedure was published in the *Railway Age* of November 15, 1924, page 889.



How Roof Timbering is Supported by Lewis Needle Bar While Bench is Being Removed and Plumb Posts Set

Practically all of the rock encountered between the east portal and the apex has been hard, gray granite, with occasional seams. East from the west heading, however, the ground has been very soft and heavy throughout, requiring support for the full 2½ miles that have been finished to date. In 1923 the west portal headings were one-half mile ahead of the east headings, but due to the soft, squeezing ground encountered, the west headings have lost over a mile of progress as compared with the operations in hard rock headings from the east portal. Relative progress at the two portals is shown on the chart.

Twin Headings Used to Marked Advantage at East Portal

As described in detail in the article previously referred to, the plan for the driving of the Moffat tunnel called for the simultaneous advance of twin parallel headings 75 ft. apart. One of them serves as the center heading for the railroad tunnel, later enlarged to full section, and the other is designated as the water tunnel as it is planned to use it eventually as an important feature of a water supply project. The two headings are connected at intervals of 1500 ft. by crosscuts. This twin-heading system had been previously used in the Simplon and

Rogers Pass tunnels, but in the solid rock encountered in the east headings of the Moffat tunnel it was developed to a high state of perfection, using the water tunnel for piping, wiring, ventilation and transportation, so that the enlargement of the railroad bore by ring drilling and shooting could follow the headings without interference.

The Heavy Flow of Water Encountered West of the Apex in the East Headings Must Be Removed by Pumping Until the West Headings Are Holed Through

This service tunnel method has proved so satisfactory in speeding up the work that it has been adopted for the western end of the new 7¾-mile Cascade tunnel of the Great Northern. Prior to February, 1926, crews at the east portal, alternating between the water tunnel and the

Oregon Fir Wall Plates Crushed and Sheared by Pressure

railroad tunnel headings through the crosscuts, were making as high as 33 ft. a day in each heading, with three shifts of 14 men each.

On February 28, a flow of water estimated at 3,000 gal. per min. was encountered in a 12-in. seam across the east railroad headings, 1,200 ft. beyond the apex of the grades. The inrush of water moved a 50-cu. yd. muck pile 40 ft. and was waist deep before the men retired through Crosscut 10 to the water tunnel with their machinery. While the water tunnel heading was filling with water from this flow there was time to bulkhead the crosscuts east of the apex and direct the water around the enlargement operations, so that it flowed out of the main portal without damage to the tunnel. The subsequent unwatering of the headings by continuous pumping interfered with tunneling progress during the spring months. However, the flow eventually decreased and since June has remained constant at 650 gal. per min., but it will be necessary to remove the water by pumping it east over the apex until the headings are holed through about the first of the year, when it will flow out through the west portal.

Stresses in Soft Ground at the West Portal

Following the resumption of operations in the east headings a series of soft seams were encountered which made it necessary to timber sections of the tunnel and proceed with caution. Simultaneously very bad ground, consisting of talc seams in the shattered biotite granite gneiss, was opened up in the headings from the west

Appearance of the Tunnel Roof After Covering the Rock with Granite

portal. The pressures developed in this ground have greatly exceeded those encountered in the blocky, disintegrated sections previously opened up and have required various types of support. Based on the stresses necessary to cause the failure of 12-in. by 18-in. Oregon fir caps on 8-ft. spans in the water tunnel it is estimated that pressures of between 15,000 and 20,000 lb. per sq. ft. of roof area must be provided for. These pressures have not only split roof caps, but have bowed the plumb posts and squeezed up the floor of the tunnel so that full arch sets have been required to hold the ground. Some of these sets have required caps consisting of 12-in. steel I-beams. As a rule, in the talc seam area the squeezing has increased upon exposure to air until a maximum has been reached several weeks after opening up, following which the ground shows a tendency to arch and reach a state of equilibrium.

Timber Lining Required

Various methods of timbering have been resorted to for the purpose of holding the ground in the railroad tunnel at the west portal. In more favorable ground 12-in. by 12-in. Oregon fir timbers with three-segment

arches spaced 2 ft. to 5 ft. center to center have been sufficient. Where the ground is heavier five-segment arches have been substituted and the spacing regulated to fit the ground. As greater pressures were encountered it became necessary to insert additional sets between those originally placed so that the timber lining was practically solid, and where this showed excessive strain 12-in. by 18-in. posts, sometimes placed double, have been used, and in no case to date has this type failed to hold the ground without signs of distress. However, collapse of the timbering has been prevented on several occasions only by careful reinforcement, and it is anticipated that steel arches may be required in the squeezing ground which the headings have recently opened up. Steel I-beam wall plates have proved effective on the Moffat tunnel work, being easy to install and affording better contact between the posts and arch timbers at the springing line.

All timber, including footings, is cresoted as a protection against the fungus which begins to attack the native timber within a few months after it is installed in the tunnel. Approximately 500,000 ft. b.m. of timber has already been placed and there is still a large amount of lining to be done before the railroad enlargement at the west portal is finished.

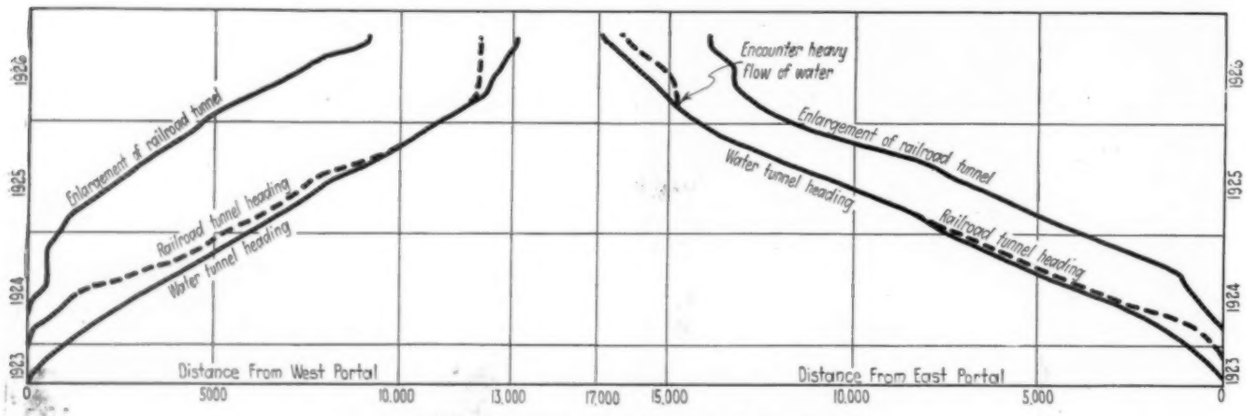
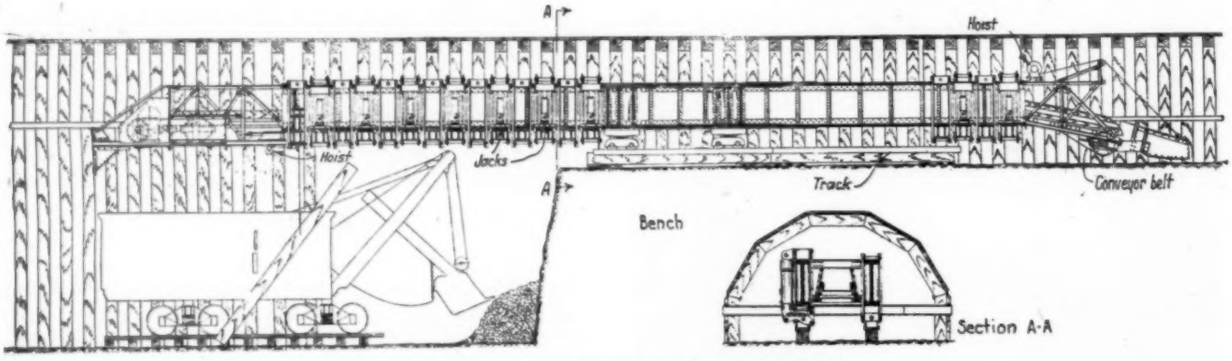


Chart of Progress in Driving the Moffat Tunnel

Develop Novel Supporting Girder

The difficulties imposed in supporting the roof in the west portal operations led to the development of what is known as the Lewis traveling cantilever needle bar or girder, designed by George Lewis, general manager of the Moffat Tunnel Commission. During September a second girder was installed in the enlargement at Cross-cut 9, two crosscuts ahead of the present bench, in order that work might proceed on the enlargement at two points of attack.

The new needle bar consists of two 65-ft. steel girders, 3½ ft. in depth, tied together by rigid struts and braces and carried on dollies running along steel channels placed on 12-in. by 12-in. stringers resting on the bench, but it is designed to cantilever to the rear beyond the end of the bench a maximum distance of 20 ft. where, as shown in the drawing, it serves as a support for the arch timbers while the shovel removes the bench and the posts are being set. The roof load is transferred to the girders by means of cross arms, suspended from these girders by stirrup hangers which extend beneath the wall plates. The slack is taken up by 15-ton screw jacks. When excavation has proceeded to the maximum 20-ft. overhang of the needle bar, it is moved ahead to a new position. This new needle bar carries an endless belt conveyor between the girders so that muck from the 8-ft. by 10-ft. heading, into which the machine must move for the enlargement operation, can be carried out beyond the bench and dumped through a chute into waiting cars in the completed railroad tunnel. This feature has made the Lewis needle bar adaptable to the heading and bench method of tunneling, as well as to the service tunnel and crosscut method where excavation from the heading was completed through the crosscut ahead of the bench. Such attachments to the girder as electric hoists for raising posts, light wiring and piping, add to its convenience and indicate its wide range of use.



General Details of the Lewis Cantilever Girder

For ground that cracks, disintegrates and spalls upon exposure to the air, gunite (one part cement to four parts sand) has proved an excellent substitute for expensive

timbering, providing there is no pressure to be held. At the east portal in particular, where occasional longitudinal seams in the hard granite have required support throughout their length after exposure to the weather, it was found that a 1½-in. coat of gunite applied immediately after excavation prevented the weathering and consequent sloughing of the rock at one-tenth the cost of timbering. With an outlay of less than $2,000 for a gunite machine, cement and sand platforms and trackage, it has been possible to cover 500 sq. ft. of tunnel wall in an eight-hour shift with two coats aggregating 1½ in. thickness at a cost of 14 cents per sq. ft. It has been found advantageous to put the gunite on in two coats in order to secure a better bond. Where a crack is filled with soft material which will fall out after a few weeks' exposure, thus releasing blocks of rock, it has been found that gunite acts as a wedge and prevents spalling. In cases where shattered, blocky ground was experimented with, however, it was found that an application of gunite created a menace, as large chunks which were hidden behind the bench would fall. When used with discretion, gunite will permit great savings, in addition to presenting a smooth surface, which reduces friction in the flow of ventilating air.

Sand for guniting, as well as concrete aggregates and ballast, are screened at the east portal crushing plant from excavated granite. On an average 150 cu. yd. of material are handled through the crusher in a day's time.

The Moffat tunnel is being financed by the sale of bonds, secured by taxable property within the Moffat Tunnel Improvement district. It has been leased to the Denver & Salt Lake for a period of 50 years at an annual rental sufficient to retire two-thirds of the first issues of tunnel bonds, or a total of $7,146,000. The railroad further agrees to assume all maintenance of the railroad tunnel and its approaches, as well as the cost of electric operation or the cost of forced ventilation in the event of steam operation, the choice resting with the railroad.

At a court sale on August 16, the receivership of the Denver & Salt Lake was concluded and the road was purchased for $3,750,000 by a group of Denver capitalists who have been large stockholders in the road since its inception. Steps are now being taken to carry out a rehabilitation of the property. By the use of the tunnel upon its completion the railroad will avoid the extraordinary operating difficulties of the old crossing of the Continental Divide in Rollins Pass at an elevation of 11,660 ft., not only eliminating 23 miles of 4 per cent grade, 28 complete circles of curvature, and reducing the summit elevation by 2,420 ft., but also avoiding the extreme climatic conditions at the summit.

Lackawanna Train No. 4 at Paterson, N. J.

Safety in the Mechanical Department

L. K. SILLCOX, general superintendent motive power, Chicago, Milwaukee & St. Paul, spoke at length on the mechanical department and its relation to safety at the meeting of the Steam Railroad Section of the National Safety Council at Detroit on October 27. An abstract of his address follows:

When safety is made a matter of serious study, two fundamental relationships come into view that are in themselves sufficient to cause the movement to be indispensable. These are, first, that safety is only one of the manifestations of a deep thoroughgoing efficiency that will show itself not merely in production but in safety, and morale as well, and, second, that safety is primarily a matter of the head rather than the hand, and hence, pre-eminently educational.

In mentioning the subject of sustaining interest in safety, the mind naturally turns to safety committees or to employees who have lost interest or who need to have their interest improved. It may be, however, that the loss of enthusiasm on the part of the employee can be traced to lack of interest on the part of the employer. Unless the latter has consistently and conscientiously kept up to date in the matter of safety, he cannot lay the entire blame on the employee for lack of interest in safety. One of the ways in which an employer can certainly indicate his sustained interest in safety is by maintaining new avenues of approach, as well as by adopting devices and processes that are developed from time to time, and while this is not meant to indicate that all schemes brought to his attention should be made standard, it does emphasize the need for being ready at all times to listen to suggestions, the application of which will make for improved safety in the handling of the work. Such a procedure does, at times, represent the expenditure of considerable sums of money for new and improved equipment or new devices. Such a situation is inescapable, in view of the contribution of the engineering profession to safety, which has been very marked, and the application of electricity and other sciences in the way of advanced forms of machinery and processes, have aided safety very materially. An employer who takes advantage of all these developments to add to the safety of his plant is making a substantial investment toward maintaining the interest of his employees in this important subject.

It is interesting to observe figures shown in the 1925 report of the Director of the Bureau of Safety of the Interstate Commerce Commission, indicating the number of freight and passenger cars and locomotives inspected, the number found to be defective, and the percentage defective each year for the past 10 years and from them see that the 1925 showing is better than for any previous year:

TABLE I

Year	Inspected	Defective	Per cent defective
1925	1,214,170	41,426	3.41
1924	1,172,900	51,387	4.38
1923	1,162,629	96,024	8.25
1922	1,096,670	46,370	4.22
1921	907,293	47,040	5.18
1920	911,537	40,416	4.40
1919	1,078,361	38,551	3.57
1918	1,119,451	42,448	3.79
1917	1,166,759	41,378	3.54
1916	967,507	35,372	3.65

In addition, the following tabulation, for period June 30, 1921 to 1925, inclusive, covering freight cars inspected and percentage found defective, passenger cars inspected and percentage found defective, locomotives

inspected and percentage found defective, and the number of defects per 1,000 inspected, indicates substantial improvement in 1925 over previous years, with respect to freight cars and locomotives, and as regards passenger cars the showing is better than that which obtained in either 1923 or 1924:

TABLE II.

	1921	1922	1923	1924	1925
Freight cars inspected.	865,858	1,046,964	1,117,355	1,128,258	1,167,980
Per cent defective....	5.34	4.35	8.49	4.47	3.48
Pass'gr cars inspected.	20,082	26,116	22,038	21,359	22,526
Per cent defective....	0.87	0.97	1.27	1.54	1.19
Locomotives inspected.	21,353	23,590	23,236	23,283	26,664
Per cent defective....	2.80	2.40	3.64	2.89	2.10
Number of defects per 1,000 inspected.....	62.36	50.54	100.31	52.73	42.46

Furthermore, a study of the 14th annual report of the Chief Inspector of the Bureau of Locomotive Inspection to the Interstate Commerce Commission for the fiscal year ended June 30, 1925, as shown in Table III, shows a 69.7 per cent decrease in number of persons killed as compared to the previous year, as well as a decrease of 33.9 per cent in persons injured:

TABLE III—NUMBER OF ACCIDENTS, NUMBER KILLED AND NUMBER INJURED CAUSED BY THE FAILURE OF SOME PART OR APPURTENANCE OF THE LOCOMOTIVE OR TENDER, INCLUDING THE BOILER, BY COMPARISON

	Year ended June 30				
	1925	1924	1923	1922	1921
Number of accidents.....	690	1,005	1,348	622	735
Per cent increase or decrease from previous year	31.3	25.5	117*	15.4	12.8
Number of persons killed.....	20	66	72	33	64
Per cent increase or decrease from previous year.....	69.7	8.3	118*	48.4	3
Number of persons injured.....	764	1,157	1,560	709	800
Per cent increase or decrease from previous year.....	33.9	25	120*	11.3	12.6

*Increase.

In addition to the train service accidents already mentioned, it is well to take account of the fact that in the maintenance of equipment department there were in 1924, 540,000 employees, of whom in that year 221 were killed and 53,311 injured, representing 15 per cent of all fatalities and 43 per cent of all injuries to employees on duty. The officers of the mechanical departments of American railroads are fully alive to the importance of overcoming these accidents. On every railroad there is a complete safety organization, providing, through the general foremen, foremen, assistant foremen, gang leaders and other supervisory forces, full and complete safety supervision and training of maintenance of equipment employees, particularly new and inexperienced men, to the end that maximum safety may be assured and a 35 per cent reduction in casualties by 1930, which is the safety goal of the railroads, may be achieved.

The result can and will be accomplished. The following methods are being used to awaken and sustain interest in safety:

Methods of Persuasion—Inspiration, education, information, group rivalry, prizes, lessons from actual accidents, recognition of meritorious acts, and the personal touch. *Methods of Compulsion*—Rules and regulations, discipline, physical safeguard, safe maintenance, and improved design or method.

Each railroad has a safety organization working through committees, staff meetings, etc., to develop to the utmost the features listed under Methods of Persuasion, and to impress the value of rules, discipline, etc., listed under Methods of Compulsion.

It is well to recall the extent to which these results are attributable to the elaborate character of the equipment and the careful attention paid to rules and regulations by the railroad managements and employees. It is true that occasionally an accident happens, though its results may be quite out of proportion to the seriousness of the accident in itself. Indeed, some of our most serious accidents have been, so far as cause and circumstances are concerned, of a relatively minor character, while others, more alarming in their nature, have been attended with few or no serious casualties. Results are, indeed, somewhat a matter of chance, in that they are governed by circumstances as much as by cause. An important point to be remembered is that every accident which occurs induces careful study of each factor involved, and this in itself, both in road practice, shop practice, and from the standpoint of design of rolling stock and locomotives, as well as the specifications and inspection covering materials entering into the same, has, by reason of more or less standardized procedure and exchange of views, made possible by the American Railway Association, resulted in a very real and fundamental way to make possible the advance in practice which is evidenced by government statistics, as well as by daily experience.

C. & N. W. Train Control Approved

WASHINGTON, D. C.

DIVISION 1 of the Interstate Commerce Commission has issued its report and order, dated October 21, approving the installation of the automatic train-control system of the General Railway Signal Company on the Iowa division of the Chicago & North Western from Council Bluffs to Boone, Ia., 149 miles of double track. After inspection and test the installation is found to meet the requirements of the commission's specifications and order. The cost figures as given by the railroad are as follows:

Roadway Equipment—	
Number of road miles equipped.....	149
Number of track miles equipped.....	298
Total cost of roadway train control equipment, including distributing power lines, power apparatus, and change in existing signal system.....	$325,404.64
Locomotive Equipment—	
Number of locomotives equipped.....	110
Cost per locomotive equipped	$3,320.52
Total cost of locomotive equipment installed.....	$365,257.20
Total cost of installation.....	$690,661.84

The company is expected to comply with the following requirements and recommendations:

1. The apparatus governing the maximum speed feature should be carefully adjusted to insure that it will cause an automatic application of the brakes in all cases when the speed exceeds the stated maximum.

2. The governor drive in this device as installed is designed upon the open circuit principle; for example, if the horizontal drive shaft should become disconnected or otherwise inoperative, the governor operated cams would not function to open or close certain of the electrical circuits as intended. The construction of the governor driving mechanism is apparently adequately rugged but if it should be found that the intended protection is not afforded by the present construction and maintenance, other means must be provided for insuring the integrity of the device in this respect.

3. While no interference from foreign current influence was reported, and none observed during the inspection other than a momentary flicker of the primary relay while passing over or near certain insulated track joints in the vicinity of Council Bluffs Depot, in non-equipped territory nevertheless the current used for this installation is that of commercial frequency, and since stray current of this frequency, should it flow toward the locomotive from in front, in one rail, and away from the locomotive in the opposite direction in the other rail, might cause serious trouble, the matter is discussed here inasmuch as it would be necessary, should such trouble develop, at once to employ adequate means for overcoming it.

4. It is suggested that consideration be given to the question whether an additional factor of safety might not be obtained at main track crossovers in non-interlocked territory, if some arrangement were employed whereby both main tracks would be shunted so long as the crossover was occupied.

Railroad Capacity and National Defense

Is margin of safety in transportation becoming too narrow because of operating efficiency and reduced inventories?

By Major Edwin C. Kelton
Corps of Engineers, U. S. A.

IT is an old saying that "an army moves on its stomach." It is still true that the gastronomic anatomy of a soldier must receive the attention of the Quartermaster Corps as well as of the Medical Department of the Army if the machine is to be kept moving but new elements vitally affecting the mobility of the Army have been introduced. The days of the interminable marches by foot that took the soliders from the back areas to the Theater of Operations and from one fighting front to another have passed.

The Cavalry and horsedrawn Artillery added mobility, but it was the steamboat, the railway, the motor-truck and, to a slight extent, the airplane that gave the Army its extreme mobility in the World War and enabled the United States to put two and a half million men in France in nineteen months.

Railroads in the World War

What part did the railways play in this movement? Between June 1, 1917 and June 30, 1919, the railways of this country moved thirteen million military passengers and some fifteen million tons of military freight. They made possible the assembling of great numbers of soldiers in the concentration areas, the supplying of them with millions of tons of military necessities and the movement of the soldiers to the ports of embarkation. It is true that certain congestions of traffic occurred and conditions became such that the government had to take possession and control of the railroads, but the fact remains that the efficiency and organization of the railroads was such that, once the necessary control over priorities, original shipments and routings was established, the traffic was carried without further undue delay.

Due to the spectacular accomplishment of the taxicabs of Paris in meeting the first onslaught of the Germans and the publicity given them, we are apt to overestimate their importance. It is well to remember that it took 800 taxi-cabs to transport to the front five battalions ($3,600 men) without any material to meet the Germans on the Marne in 1914, while seven trains carried to the same front the other seven battalions of the division together with the material of the first five.

An Effective Organization for Control

Anyone who saw the trains moving the French and British divisions to Italy in the fall of 1917 appreciates the part the French railways played in the World War. The bulk of the transportation was by rail. From the railheads forward excellent service was rendered by trucks, light railways and animal-drawn transportation. Aircraft, for the usual transportation of supplies, had not entered the picture.

For those charged with studying the problem of national defense there always arises the question, "Will our transportation facilities be adequate?" As they proceed further with the problem questions arise as to the part that each element of the transportation systems of the country will play in a program for the defense of the country. Are each of these elements organized to meet the emergency? Is their personnel aware of the functions which they will be expected to perform? Is the material sufficient to meet the emergency? Is there adequate legal authority for the exercise of the necessary co-ordinating and directing control? Are the activities of one element co-ordinated with the other modes of transportation to insure an harmonious working of the whole?

To most of these questions the railroads of the United States could answer in the affirmative. Because of the accomplishment of a co-operative effort that has met with success all along the line, they could do so with just pride. The praise belongs to the railroads. Under the authority of the Interstate Commerce Commission and the instigation and direction of the American Railway Association the railroads have established a system of control of the traffic of the country which has never been equalled in the history of transportation. Through the agency of the Car Service Division, American Railway Association, with the backing of the Interstate Commerce Commission, control of the freight cars of the country is complete. The statistical records required to accomplish this are simple yet effective; standing orders perform the majority of the work; special orders, embargoes and priorities accomplish the remainder. Car shortages have almost been forgotten, while industry has become accustomed to operating from hand to mouth. Industrial stocks have been reduced; interest on the investment and costly delays due to car shortages and irregular deliveries have been reduced to a minimum. All this has added to the prosperity of the country and, it is hoped, reduced the price of goods to the ultimate consumer. Let us see, however, what relation all this has to the national defense.

In case of war the government becomes the largest shipper of goods. This change comes about almost over night. From an almost insignificant amount the tonnage of military supplies soon reaches an enormous figure. This includes not only the movement of strictly military goods in the form of finished products and food for the direct consumption of the army and navy, but also the raw materials and fuel for the factories employed in filling government contracts. The fate of the nation depends upon the expeditious delivery of these goods and the transportation of the men and supplies to the front.

In exercising the control of freight transportation the Car Service Division of the American Railway Associa-

tion has developed remarkable technique and efficiency. In accomplishing same, however, the co-operation and advice of the shippers has been found essential. This has been obtained through the Regional Shippers' Advisory Boards that have been organized in various regions of the country. Through their various commodity committees representing industries, mines and agriculture, these boards are able to forecast the probable demand for cars. Upon such advice the American Railway Association is able to take steps to meet the demand much more efficiently than if the demand were not known until the orders were actually placed.

What Would Happen in War?

In time of war a nation employs all the available agencies which will advance its military position. As may readily be understood the Car Service Division, is such an organization. It is natural, therefore, that its services should be employed in time of war in much the same manner that they are being employed in time of peace by the Interstate Commerce Commission. In case of war, in accordance with the Transportation Act of 1920, however, priorities and embargoes, etc., which are necessary will be certified to the Interstate Commerce Commission by the President. It is natural that they should be promulgated and carried out by the American Railway Association in the same manner as in peace. In war time the army and navy become large shippers. The military and naval agents in the field occupy positions similar to the large shippers of commercial articles except that many of the shipments demand and must receive preferential treatment. As the shippers are organized to furnish advance information as to probable shipments, so the War and Navy Departments will be organized to give prompt advance information as to shipments. Emergencies and changes in the military situation may cause the estimates made from time to time to be somewhat inaccurate but the flexibility of the present system of control is such that with a reasonably accurate knowledge of the demands the railroads will be able to meet the load. With this method of operation in mind the American Railway Association has been co-operating with the War Department and a comprehensive scheme of operation evolved. In this scheme the probable demands for transportation for the movement of large bodies of troops or supplies will be made known to specially selected representatives of the American Railway Association. That organization will then complete the details for the expeditious handling of the movement.

Conditions may arise, however, when further control steps are necessary. In 1925 the War Department presented to the railroads a plan for operating the railroads in war which met with the approval of the Association of Railway Executives. This plan was only tentative and should not be considered to foreclose any future action or supersede any other plan the government might wish to adopt in time of action. It expressed the policy, that the railroads should not be taken over by the government unless the emergency was such that in the opinion of the President such a step was necessary. It further stated the principles upon which the plan was based and included an outline of the organization and operating principles to be employed. The full text of this plan was printed in the *Railway Age* of March 7, 1925.

It would appear, therefore, that as far as organization is concerned plans have been well advanced not only for the control and handling of rail transportation in the early stages of a conflict but also in the later stages, even under the most adverse conditions. It remains to consider the material side of the problem. Without adequate material no organization, however, perfect can function effectively.

Does Increasing Efficiency Endanger National Defense?

In this problem we are confronted with the anomaly of increased efficiency tending to endanger our national defense. With increased efficiency on the part of the railroads and the American Railway Association, adequate transportation has been provided with less equipment per ton-mile of freight carried than ever before. It is good business for the railroads avoid making additions to their rolling stock terminals and trackage until forced to do so. No appreciable car shortages have occurred for several years with the result that railroad and industrial stocks have been reduced far below what was considered safe in 1922. In other words, both the railroads and industry have reduced their factors of safety as to continued operation and have made themselves more than ever dependent upon the successful co-ordination and handling of freight. In consequence any interruption or disturbance of ordinary traffic—as is only too apt to occur in the early stages of a major conflict—will be attended by serious results more quickly than during the last war. Then our very lack of efficient co-ordination and operation was in itself a factor of safety. It permitted an increase in carrying capacity by the simple application of increased efficiency. It merely remains to determine whether the railroads have permitted their facilities, both trackage and rolling stock, to fall behind to the danger point. Some railroad men believe this to be the case.

Trunk Line Capacity Is Being Reached

Mr. L. F. Loree has already sounded the warning that "in our main lines of heavier traffic the margin of capacity to take care of additional business is nearing the danger point." News items appearing from time to time appear to justify his belief. For example, on the Pennsylvania Railroad, 9,698 freight cars moved through Altoona, Pa., on February 1, 1926. The average for the month was 7,939 cars. On February 7 *one hundred seventeen* eastbound freight trains moved through the city, or an average of nearly *five trains* per hour. To compare this with the known heavy military traffic, the following is quote from an address by General A. L. Dumont, now French Military Attache to this country, who was responsible for much of the success of the French railway operation during the war.

"On the Eastern System the Chief Engineer accepted *three trains* an hour on double track lines and that during sixteen consecutive hours and then two only for eight hours, altogether sixty-four trains a day as a maximum, and seldom made them either. He was a *pessimist.*

"On the Northern System (mine, of course) the Chief Engineer accepted *six trains an hour* on double track lines, limiting the daily average to seventy-two. But, in fact, for three years he ran more than a hundred trains daily through Amiens and at times of emergency the figures went up to the maximum of *one hundred and forty-four* on each track. We were *optimists.*"

Is it not evident, therefore that some of the railroads are reducing their factors of safety on trunk lines, terminals, repair facilities, etc., below the danger line?

Rolling Stock at Low Point

In the matter of rolling stock similar danger signals are out. M. J. Gormley, Chairman of the Car Service Division, American Railway Association, has recently stated, "The supply of surplus serviceable freight cars is practically exhausted. This condition is particularly

marked in the case of open top cars, the average daily surplus is now only thirty-three thousand, and thirty-nine cars, a figure less than half an average day's loading of this class of equipment." What industry in the country could hope to operate with such a small margin of safety?

L. M. Betts, Manager of the Closed Car Section of the Car Service Division, has recently addressed the following mail-gram to the railroads: "Present and precedented car loadings have reduced closed car surplus everywhere to the vanishing point. * * *"

These quotations show the seriousness of the situation and the cause is not far to seek. The "unprecedented car loadings" are the direct cause, but in connection with the present situation the railroads might well consider the following figures published by the Car Service Division, American Railway Association, on September 24, 1926:

"5. Additions to Equipment (Class I Roads)

a. Freight Cars Put in Service

	Box	Refg.,	Coal	Stock	Flat	Others	Total
Jan. 1 to July 31, 1926..	28,907	6,764	27,029	1,015	1,640	903	66,258
Year..1925..	61,140	5,626	48,670	5,928	5,697	1,361	128,422
Year..1924..	72,808	13,546	48,678	9,571	10,298	1,513	156,414
Year..1923..	78,711	22,078	83,296	5,835	5,520	2,435	197,875

b. Freight Cars on Order as of Aug 1st, Compared with Same Date Previous Years.

	Box	Refg.,	Coal	Stock	Flat	Others	Total
1926..	12,814	1,111	12,326	1,423	1,128	300	39,102
1925..	12,209	1,322	8,598	2,497	1,772	415	26,813
1924..	26,444	2,240	16,190	4,826	2,084	591	52,375
1923..	38,689	9,299	34,457	2,214	1,805	252	86,716

6. Freight Car Ownership and Average Carrying Capacity

	Cars	Tons
August 1st, 1926	2,348,508	45.06
January 1st, 1925	2,337,230	44.34
January 1st, 1924	2,307,997	43.8
January 1st, 1923	2,310,604	43.1

While the ownership has only increased 37,904 cars, or 1.6 per cent since January 1st, 1923, the Average Carrying Capacity per car owned has increased 1.96 tons per car, or 4.5 per cent.

7. Locomotives put in Service

January 1st to July 31st, 1926	1,288
Year 1925	1,733
Year 1924	2,246
Year 1923	4,037

8. Locomotives on Order August 1st

1926	517
1925	250
1924	401
1923	1,772

9. Locomotive Ownership and Average Tractive Power

	Locomotives	Average tractive power
August 1st, 1926	63,200	41,193
January 1st, 1925	64,870	39,916
January 1st, 1924	64,896	39,164
January 1st, 1923	64,566	37,692

While the number of locomotives owned has decreased 1,366 locomotives, or 2.1 per cent since January 1, 1923, the average tractive power has increased 3,501 lbs. per locomotive, or 9.3 per cent."

An analysis of these figures indicates that since 1923 there has been a continual reduction in the number of locomotives and freight cars put into service. The increased size of the equipment has not made up for the reduction in number. It is probable that the present critical condition will be met with success, but the experience has pointed out the danger, a danger that should be understood and faced with resolution by the railroads and the Interstate Commerce Commission.

Railroad Efficiency Reduces Commercial Stocks

Our situation with respect to commercial stocks is even more serious. It used to be that six months' to a year's stocks of raw materials, fuel or finished products were held by manufacturers and jobbers, etc., to assure continuous operation. Better service by the common carriers has permitted a great reduction in stocks. The railroads themselves, like other businesses, have profited. It is estimated that the value of the average stocks of the railroads for the three years 1922-1924 was $191,000,000.00 (Railway Age, May 22, 1926, p. 1361), less than it would have been under the conditions existing on the average of 1916-1918. It is further estimated that this represented a saving of from thirty to forty-seven million dollars. At the end of 1917 the stocks on hand represented a six months' supply while for the latter three years they represented only a four months' supply, which in 1925 and 1926 has been even further reduced.

If the railroads have reduced their stocks this much it is only too evident what the other industries have done. Charles S. Keith, Ex-President of the Southern Pine Association, has stated concerning the lumber industry, "Where the dealer or consumer had to anticipate his requirements three to six months in advance, he now figures on thirty to forty-five days and has liquidated his stocks accordingly." (Nation's Business, Oct. 1925, p. 40).

If we assume this reduction as sixty days' supply and the daily consumption as 132,000,000 feet, the reduction of lumber on hand near the point of consumption is approximately 7,920,000,000 feet. To transport this requires nearly 2,000,000 freight cars.

In the other industries the conditions are similar. R. P. Lamont, president of the American Steel Foundries, and Mr. E. M. Herr, president of the Westinghouse Electrical and Manufacturing Company, have given similar testimony in Nation's Business. They have all reduced stocks of both raw materials and finished products. Now for the result in time of war.

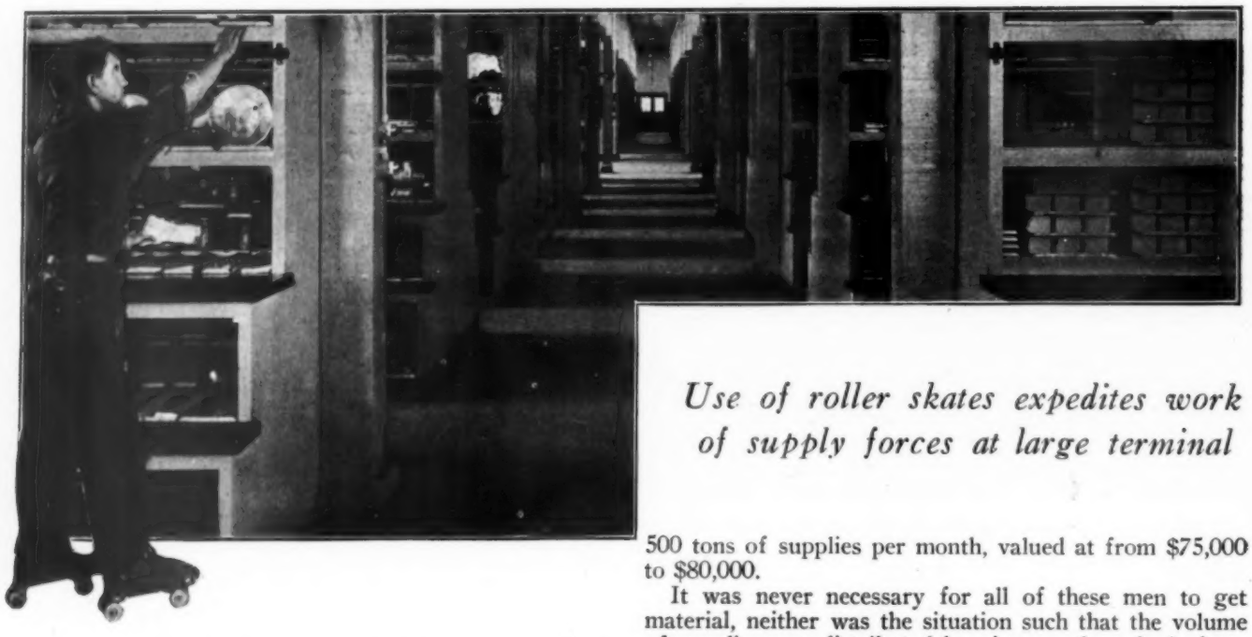
War Time Load on Railroads Increased

As relations gradually become strained between the United States and other nations, industry will become nervous. It will see the necessity of curtailing certain activities and of expanding others. History has proven that the expansion is greater than the curtailment. It will foresee a threatened shortage of transportation and raw materials. It will think of available stocks and fined them reduced to thirty or forty-five days' supply. Panic will ensue and a wild orgy of bringing those stocks up to four or six months' supply will follow. In the lumber industry alone this means 2,000,000 car loads for a two months' supply. For the other industries the figures will run up in proportional amounts.

Wars are no longer fought by standing armies or paid mercenaries. Entire nations are involved. Preparations to meet any emergency which might be forced upon a people are a duty not of the army and navy alone but of the nation. Without the support of the nation the army and navy are helpless. Without adequate transportation, the nation is helpless. In the cause of national defense, therefore, the plea is put forth that our manufacturers maintain adequate stocks and that our railways and the Interstate Commerce Commission face their responsibility of at all times having on hand adequate facilities for the transportation of men and supplies.

The "Philadelphia Perishable Products Terminal," is the name of a new freight station, which has been established at Delaware avenue and Jackson street, in the heart of Philadelphia. It was opened for business on November 1, and is to be used jointly by the Baltimore & Ohio and the Reading. The perishable freight business heretofore conducted at Pier 22, South Wharves, has been transferred to the new station, together with the citrus and deciduous fruit auction, regularly conducted at Pier 22, two large rooms at the new station having been assigned for this use. The new station covers an area of 23 acres and the buildings are equipped with all modern facilities. The team tracks have already been in use for some time.

Novel Shop Delivery Service on Los Angeles & Salt Lake



Use of roller skates expedites work of supply forces at large terminal

AT the Los Angeles terminal of the Los Angeles & Salt Lake, the delivery of supplies from the storehouse to the shops, yards and other points has advanced from the argumentative stage to the roller-skating stage, with the ending of debate on the merits of shop delivery practice and the inauguration of a system which is not only featured by a distinct delivery organization, telephones and systematic transport, but where the material can ride part way to destination on roller skates.

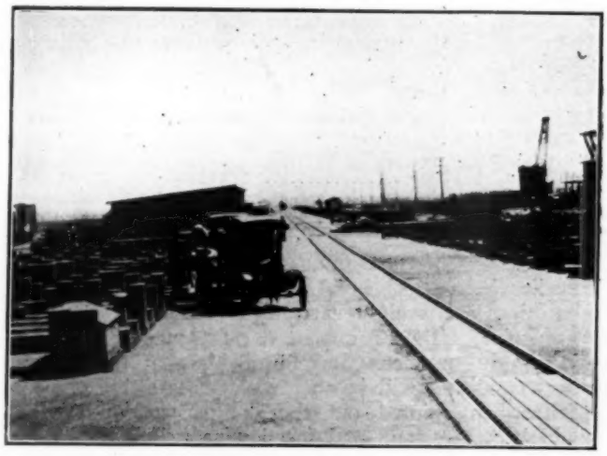
The skating takes place in the main storehouse where one of three floormen has the rollers strapped to his feet all day. The skates came because the business was rushing and the stock room long. Though novelties at first, they are now commonplace and routine in the general order of things. The floors are smooth and the aisles straight and the result is that with the increased speed afforded over the floor, one man on skates is the equivalent of three men on foot similarly employed. The success of the innovation, it is claimed, has been commensurate with the success which has attended the operation of the shop delivery system in general.

A Year's Experience

Shop delivery by store forces was started at Los Angeles on May 1, 1925. Prior to that time the practice followed was the typical one under which mechanical department employees would obtain their materials by securing requisitions from their foremen and then personally bring them to the main storehouse or other stores points where the desired materials were carried.

The practice was not satisfactory. Los Angeles is the big shop point on this road. Besides several miles of car repair tracks it includes a 20-stall roundhouse, a 10-pit. locomotive erecting shop, a large coach shop, a steel car and blacksmith shop and various other buildings. There are approximately 800 users of storehouse material here, whose requirements have been estimated to approximate 500 tons of supplies per month, valued at from $75,000 to $80,000.

It was never necessary for all of these men to get material, neither was the situation such that the volume of supplies was distributed by piece-meal methods from the main storehouse. Some sub-stores were maintained and certain material, particularly that for car repairs, was obtained from stock by designated employees. Much of the distribution, however, was in the nature of deliveries directly to users over the storehouse counter, where a crowd of mechanics could always be found waiting for this material. The visiting that was prevalent at the storehouse counter has its ill effect upon the store men. The principal effect of this practice, however, was the time lost by mechanics which could be better devoted to the work for which they were employed. In this connection the Los Angeles shop, unlike the typical shop point, is laid out on an expansive plan so that each building can be greatly enlarged without crowding. A result of this planning is that at the present time the



The Casting Yard at Los Angeles Is Readily Accessible to Delivery Trucks and Tractors

various buildings are noticeably removed from each other and from the main storehouse. The locomotive shop, the nearest building to the storehouse, is 200 ft. distant, while the radius of the shop area is from one-half mile to one mile. It is estimated that the aggregate time consumed in going for material, waiting at the counter and returning was 20 min., for each employee. It was to correct these conditions and otherwise to co-ordinate and expedite the entire distribution system,

A Counter Man Equipped with Roller Skates

which extended to other points in the city, that a regular inter-departmental delivery system by supply department forces was inaugurated in 1925.

Operations Extensive

This system provides for the delivery of material to all points in the shop terminal including the roundhouse and coach yard which is several hundred feet from the storehouse; also for deliveries to the freight car repair yard, the signal, the track and the bridge and building departments located at different points around the city, while it also extends to the collection of supplies in the city for delivery to the general stores and for the transfer of materials from the reclamation plant to the store. The organization for the work consists of the following:

1 Delivery foreman whose duties are to supervise generally all the activities coming within the scope of the system.
1 Clerk to handle all orders and to supervise the routing of material to different points.
6 Truck and tractor drivers.
3 Supply men in the roundhouse to supply locomotives with oil, waste, tools, etc.,—one man for each shift.
3 Helpers—two handling hand carts, with the third at the freight car repair track.
2 Laborers who assist truck and tractor drivers in handling the material to the shops.

This constitutes a force of 16 employees, exclusive of the three counter men in the main storehouse, one of whom is equipped with roller skates. The deliveries are made by tractors, trailers and hand carts, of which there are 47 units as follows:

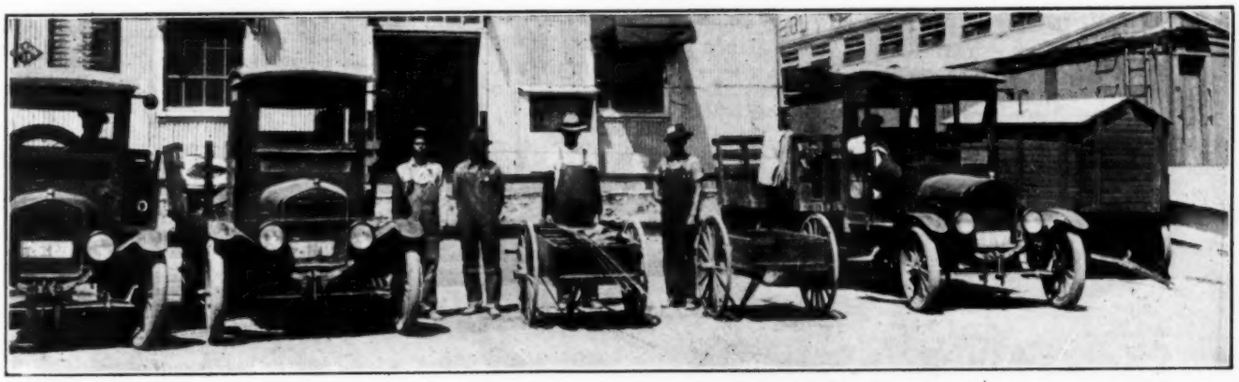
5 One-ton trucks.
2 Tractors.
33 Small four-wheel trailers.
5 Large four-wheel trailers.
2 Push carts.

All material which it is practical to handle with this equipment is delivered to the point of use. All large material which it is not practical to handle with the trucks or tractors is delivered to the shops by locomotive cranes.

The operation of making the deliveries is as follows: At a convenient location in each shop are small boxes. These are painted yellow, and attached to each is a small metal flag serving as an indicator for the delivery man. The indicator is raised if the box contains requisitions. These tickets are picked up at intervals by the delivery men handling small materials and are brought to the store and sorted. Those covering materials that can be delivered with the push cart are passed to the storekeepers of the different sections for filling and those covering large or heavy material are passed to the delivery foreman's clerk who arranges to have the material delivered by truck or with a tractor.

Section stockkeepers filling requisitions for small materials accumulate these at the storehouse counter, where they are picked up by the delivery men with push carts. These are placed in receptacles in each cart and are delivered to the place in the shop designated by the foreman who ordered the material. Approximately 10 trips are made each day to the main shop and coach shop and about one trip each hour to the roundhouse and coach yard. There is no particular time schedule set but deliveries are made with as great dispatch as possible.

In case shops have any material for the store, the delivery man picks up a form which the foreman makes in triplicate and deposits in the same box with the requisitions covering materials needed. The delivery man passes these to the shop delivery foreman's clerk, who in turn assigns a truck or tractor driver to pick up the material. The driver, when picking up the material, signs the original ticket which is handed to the shop foreman as his receipt for the material. The other two copies are returned with the material to the store, one



The Delivery System Comprises 16 Men and 47 Units of Equipment

going to the receiving clerk for his record and the other to the office for accounting purposes.

The entire system is planned to dispense with the necessity of shop employes coming to the storehouse to determine what they need. The requisitions are prepared and passed by the foreman in charge of the work who is expected to know what is required. If the foreman finds it necessary to investigate the quantity carried, see the material or to obtain other data, he calls at the storehouse himself or communicates with it by telephone.

Shop Delivery Dispatching Board

Equipment Number	Operator	Time	Boiler Shop	Machine Shop	B & B Shop	Blacksmith Shop	Coach Yard	General Office	Round house	Elsewhere
Truck No 1										
Truck No 2										
Tractor No 1										

A Diagram of the Board Employed for Dispatching Tractors

A Dispatching System for Trucks

The supply organization, on the other hand, is organized and operated with a view of giving the service continuously which the users of material need. As an aid to the accomplishment of this purpose a small office building, 6 ft. wide and 18 ft. long was built close to the main storehouse building. In this building are two desks, one for the delivery foreman and the other for the clerk. Here the administration of the delivery work is carried on without interruption from other operations. In this building is a dispatcher's board by means of which the shop delivery clerk follows and controls the operation of trucks and tractors throughout the day. The type of board used is indicated in the accompanying diagram. The first column lists the equipment by the number which each unit given. In the second column is a place for the name of the operator, while in the third column are mechanical time clocks, marking the hours from 7 a.m., to 6 p.m. The hand on each of these clocks is moved by the delivery clerk, when desiring to make a change in the time. The balance of the board provides columns for each of the various shops and other points to which trucks make deliveries. In the columns under the heading of the various shops are holes in which colored pegs are inserted to show where each truck or tractor is working, thus giving the shop delivery foreman clerk the whereabouts of any driver and equipment at any hour of the day.

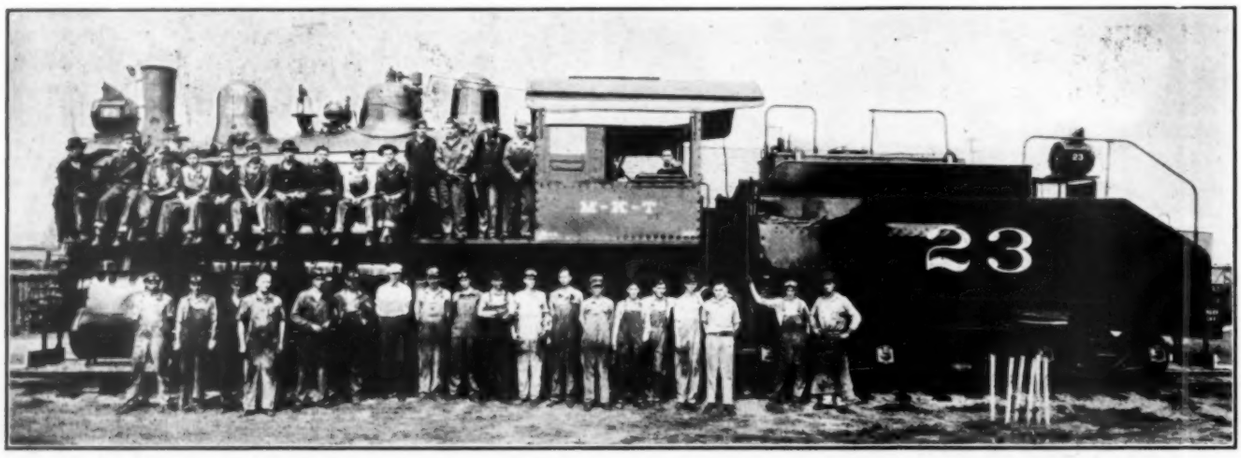
Telephones Also Help

An extensive system of telephone communication is also employed in connection with the delivery work. At Los Angeles the communication is carried on between the various shops and the storehouse by means of intercommunicating telephones. The exchange is installed in the main storehouse building and all shop foremen, delivery foremen, section storekeepers and other officers have telephones connected with it. The value of this feature is obvious. Thus, where materials are required in the shops before the regular delivery man makes his trip to the shop the foreman can readily telephone the shop delivery clerk. Again, if material is not in stock, the ordering foreman can be notified quickly whenever it appears important to do so, while fewer occasions arise where it becomes necessary for foremen or mechanics to consume time either in getting material or in clearing up questions related to the preparation of requisitions, etc.

There is no question at Los Angeles, but that the present plan is a great improvement over the old practice. Under the present plan, no confusion exists at the storehouse counters from efforts of stores employees to decipher what shop forces need or from the visiting on the part of large numbers of men waiting around for material.

Mechanics are not taken from their work to secure material and a more economical and systematic arrangement of distributing and handling of material throughout the shop district and city has been accomplished. No reduction was made in the number of counter men in the storehouse because under the present plan the services of these men are required in filling requisitions brought to the storehouse by the delivery forces, but this work, in turn has been greatly expedited by equipping one of the men with roller skates.

The delivery work at Los Angeles is carried on under the general direction of J. H. Cragin, general storekeeper, who has had the co-operation of the mechanical department in inaugurating the system and bringing it up to its present state of perfection.



Switcher Completely Overhauled by Missouri-Kansas-Texas Apprentices at Waco, Tex., in 26 Working Days

All Work Was Done by Apprentices, Including the Application of New Firebox, Flue Sheets, Cylinders, Bronze Shoes and Wedges, Boxes, Crown Brasses, Tires, Axles and Crank Pins, Steel Cab, Dry Pipe and Steam Pipes, Pistons, Crossheads and Guides, Valves, Exhaust Stand, Tip and Stack, Main Rods and Bushings, and Rebuilt Tank Frame.

Freight Car Inspection*

Terminal yard inspection and repairs made by a single specialized force suggested to reduce equipment failures on road

By A. J. Krueger
Master Car Builder, New York, Chicago & St. Louis

FREIGHT car inspection in its relation to freight train operation is one of the most important and difficult problems confronting the railroads today. The successful operation of freight trains fundamentally depends upon the ability of the railroad to obtain a proper freight car inspection and in this manner move trains with full capacity tonnage from one terminal to another without interruption on account of equipment failures. In order to accomplish this, it requires positive freight car inspection, as well as maintaining such inspection at all times.

Ordinarily, there are two ways in which inspection can be performed. One is termed Positive, the other, Negative. Positive inspection can be secured by means of a well organized force of inspectors, properly instructed and supervised and regularly assigned to perform certain duties and in this manner specialize in their work and know, beyond the question of a doubt, that every part of the car body and trucks has been properly inspected. Negative inspection is secured by making inspection in a general way without any well defined system set up covering the duties to be performed by each inspector and which condition can easily be found in a great many railroad yards today. When we analyze this situation, we cannot be surprised at the failures which occur considering the short period of time in which the inspector is required to perform his work. Positive inspection cannot be accomplished unless we give consideration to some of the things which are essential to make it successful.

In making inspection of a freight car under common present day methods, the inspector is usually required to observe the condition of all parts on car body and trucks (except possibly the air brakes and journal boxes) in a very short period of time. Inspections made in this manner make it necessary for each inspector to detect, among other things, the following:

Loose and missing box and column bolt nuts.
Condition of journal boxes, truck springs, spring planks, truck bolsters, arch bars, or side frames.
Condition of brake rigging, which is intended to mean that the inspector should observe the condition of brake beams and hangers, brake beam truss rods and nuts, fulcrums, compression and tension members, brake heads, brake shoes and keys, bottom connections, brake levers, and most important of all to know that all brake and brake hanger pins have cotters properly spread and in good condition, or a suitable device for holding the pins in place.
Condition of wheels by inspecting for cracked plates, broken rims, loose wheels and other condemnable wheel defects.
Condition of safety appliances, couplers and parts, draft gear and parts, etc.
Condition of car body including underframe, ends, sides and doors, roof and running boards.

These are some of the things we expect our freight car inspectors to do and when we devote the proper attention to the possibility of accomplishing this, it seems that this kind of inspection can better be accomplished by specializing or classifying the work; in other words, to assign definitely to certain men the inspection of certain parts of the car body and trucks.

Specialized Inspection an Adaptation of Progressive Repair Methods

The progressive car repair shops of today are operating on this basis and some progress in freight car inspection has been made along these lines, as invariably the air brake inspection and inspection of journal boxes and contained parts is made in this manner at most railroad terminals at the present time. There appears to be no reason, therefore, why this policy could not be successfully extended, and as an example, could be operated somewhat in the following manner:

A—Car oilers assigned to lifting journal box lids, making careful examination of journal bearings, journal bearing wedges, journal box packing, making repairs where required and making sure there is no evidence of heating or trouble on account of hot boxes.
B—Inspectors assigned to air brake inspection and repairs.
C—Inspectors assigned to trucks, including all truck parts, brake rigging and wheel inspection and repairs.
D—Inspectors assigned to couplers and parts, draft gears and safety appliance inspection and repairs.
E—Inspectors assigned to general condition of car body, side doors and roof inspection and repairs.

This plan can, of course, be modified to suit local conditions as they exist and when we consider that the more efficient our freight car inspection and repairs become in our train yards, it should reflect a decrease in the number of cars condemned to the repair tracks.

Specializing or classifying car inspection requires analysis on the part of our supervision to select men particularly suited to the individual requirements of the assigned position. It has been found that men were selected for inspectors from repair track forces at random and sent out to inspect trains without the supervision spending enough time to instruct them properly for this work, which results in men being out in the train yard as inspectors who really "don't know where they are going, but are on their way."

Essential to positive freight car inspection is the manner in which interchange inspection is performed. Ordinarily, we think of interchange inspection made at some outlying inspection point where the inspector usually has sufficient time to go over the cars three or four times if necessary and at such location there should not be much occasion for failure to secure proper inspection and repairs. However, interchange inspection as performed at large originating terminals presents no easy problem to solve. We all, no doubt, have puller trains coming from connections or industries which are delivered at four or five different locations, making it necessary either to establish separate inspection forces, or require inspectors to go from one location to another, which consumes considerable time. This, therefore, among other things, suggests that considerable improvement in inspection and conservation of time should

*Abstract of a paper presented before the Cleveland Steam Railway Club, November 1, 1926.

be secured if arrangements are made to concentrate car inspection at designated locations with a force sufficient to specialize on the inspection and make repairs at the same time.

Transportation Department Co-operation Vitally Important

In order to do this, close co-operation is required between the transportation and mechanical departments, so that the proper tracks can be selected and assigned for this purpose to make it possible for the mechanical department to function properly in this respect consistent with the facilities available.

Adequate material supply for inspectors and train yard repairmen, as well as an effective means of transporting such material, is in most cases such that it actually makes it a burden for the inspector to make the necessary repairs in the train yard. It is no uncommon sight to see an inspector crawl in between cars and walk a considerable distance to secure a knuckle or lock or other items to make a repair and the greater the hardship we work upon the inspector to do this, the greater the liability for the inspector to take a chance and permit the defective part to continue in service.

Important to freight car inspection is the manner in which equipment failures are investigated. Usually such investigations are made by the local supervisor in charge in the territory where such failures occur. Very often, in making such investigations, we find occasion to criticise the inspector for failure to observe the defective condition of the part which caused trouble, without deciding if the inspector has been properly instructed, if he is competent to perform the work required of him and if he has sufficient time to make positive inspection. I am inclined to think that we are too ready to jump all over the inspector for his shortcomings, in place of deciding what can be done to help him.

Considerable improvement could be brought about by creating a desire on the part of the inspector to feel free to make recommendations, or suggestions, to his Foreman in connection with his work. This can be accomplished by making the inspector feel that he is an important and necessary part of the organization created by means of close frequent contact on the part of the local supervisor and will result as well in the supervisor becoming intimate with the peculiar problems and difficulties that the inspector is up against. It is certainly worth while to hold meetings with our inspectors at regular stated intervals so that he will become accustomed to looking forward to such a meeting for the free discussion of problems, current instructions issued and the effective A. R. A. rules of interchange which apply to his work.

We often find that certain instructions which have been issued are not being followed and upon looking into this we discover that there has been no method established for providing the inspectors with such instructions.

The kind of tools and gages which are supplied to inspectors for their work is of the utmost importance and also that he knows how to use them. Take for example the use of the A.R.A. wheel and coupler gage: How often do any of us make it a point to find out if the inspector really knows how to use it and if we know all about it ourselves?

Some Expected Improvements in Operating Results

On the other hand the character of the repairs made to cars on repair tracks can be of material assistance to the inspector in his work by turning out repaired equipment which will operate in service without causing failure.

This review on freight car inspection is principally confined to the more important items which it is felt will produce positive inspection and in which specialized inspection is advocated. The results which can be obtained by proper freight car inspection with respect to train operation can, among other things, be measured by means of the following:

1—Decrease in average time of trains between terminals.
2—Decrease in number of cars set out, or causing delays to trains account of defective equipment, which permits increase in tonnage.
3—Decrease in number of lb. of coal consumed per thousand gross ton miles.
4—Increase in percentage of fast freight trains making assigned schedules.
5—Increase in freight car miles per hot box.

Railroad revenue is derived exclusively through its transportation service to the public, which cannot be obtained without making it possible to operate freight trains quickly and safely and which, among other things, depends largely upon the various types of inspection of freight cars as follows:

First—The inspection made to the empty car to determine its fitness to carry the load intended.
Second—The interchange inspection and repairs made at the originating point on each line.
Third—The terminal inspection and repairs made while the car is en route.

There are so many things indirectly concerned with the accomplishment of proper freight car inspection, that it requires continual study and analysis.

The manner in which we are today performing freight car inspection at large terminals has made very little progress as compared with the way in which it was done since railroads were first operated.

In visualizing the improvements which can be made to secure the highest standard of freight car inspection, it is not hard to realize that the future will develop a method for inspection upon the arrival of freight trains pulling into terminals and stopping at locations which are in reality our light repair tracks of today where we will find adequate facilities and materials of all kinds conveniently located with a sufficient force of competent men to make inspection and repairs quickly and thoroughly under a well organized plan which will result in less handling of bad order cars and insure the possibility of accomplishing that which appears impossible.

Freight car inspection is so vital to the success of the railroad that it is necessary for our supervisors continually to stimulate interest and enthusiasm and impress this permanently in the minds of themselves, as well as on the men doing the work. If we keep both eyes open to the opportunities for improvement this cannot help but reflect a decrease in equipment failures and will assist the great common carrier of today in taking one more step in the direction of progress and fulfilling a responsibility in serving the public efficiently and safely.

THE NORTHERN PACIFIC, the Great Northern and the Minneapolis, St. Paul & Sault Ste. Marie have notified the Minnesota Department of Agriculture that $4 a car will be charged for sampling or diversion of grain. The charge represents half the amount the railroads found to be their per car cost for handling a car for sampling or diversion.

A GRAPE GROWERS' co-operative organization was formed at Fresno, Cal., on October 25 at a meeting of a committee of 29 growers representing all parts of California. A definite basis for organization was laid out and a committee of 29 was named to perfect the details. The organization will co-operate with the Car Plan sponsored by the American Railway Association and the Pacific Coast Regional Advisory Board.

C. R. SUGG
Atlantic Coast Line
First Vice President

E. WANAMAKER
Chicago, Rock Island and Pacific
President

J. A. ANDREUCETTI
Chicago and Northwestern
Secretary and Treasurer

Annual Meeting of Railway Electrical Men

Active sessions indicate increasing importance of electrical subjects

THE Association of Railway Electrical Engineers held its seventeenth annual convention last week at the Hotel Sherman in Chicago. The meetings which covered four days were opened on Tuesday, October 26, by the address of the president, E. Wanamaker, electrical engineer of the Chicago, Rock Island & Pacific. Mr. Wanamaker reviewed briefly the history of the association and pointed out the necessity of greater activity of the electrical man who is to keep abreast of the rapid progress being made in his field. He spoke also of the need for close co-operation between the railway men and the representatives of the supply manufacturers and concluded by calling attention to the increased amount of interest shown by the manufacturers in providing exhibits which were larger and more interesting than ever before. The supply men were invited to take part in the discussion of the reports.

The report of the secretary-treasurer presented by J. A. Andreucetti, assistant electrical engineer of the Chicago & North Western, showed that the association now has on hand a cash balance of $5,197.69. There are now 444 active members and 164 associate members, and the work being done by the members includes, besides the regular reports, the compilation of three manuals, one on electric welding, another on lighting practice, and the third on recommended practices of the association.

Officers were elected during the first session as follows: President, Charles R. Sugg, electrical engineer, Atlantic Coast Lines; first vice-president, E. Marshall, electrical engineer, Great Northern; second vice-president, J. L. Minick, assistant engineer, Pennsylvania System; members of the executive committee, V. R. Hasty, electrical engineer, Union Pacific, and G. T. Johnson, assistant electrical engineer, New York, New Haven & Hartford.

The sponsor committee of the engineering standards committee on wires and cables was the first to present its report. The work of the latter committee is divided into many sub-committees and a verbal report of the progress was presented by F. J. White of the Okonite Company, Passaic, N. J. A brief discussion followed in which attention was centered on the subject of Parkway cable and the need of overcoming difficulties which have been encountered by corrosion and destruction by rodents.

Radio on Trains

The report of the committee on application of radio to railway service was presented by Ernest Lunn, electrical engineer of the Pullman Company. It was devoted almost exclusively to equipping Pullman cars with sets for receiving broadcast entertainment. A lengthy and interesting discussion dealt mainly with the use of radio as a means of communication between the head and rear ends of long freight trains. Results of tests with radio and wire connections were cited to show that the savings which could be effected this way in transportation charges warranted a considerable expense for communication equipment. Some of the members were particularly optimistic with regard to the early possibility of its adoption, while others felt that voice trans-

mission was not at present important and that all efforts should be confined to code signaling. The report was accepted as information and the committee, which is to be continued, is also to be enlarged so that a comprehensive study of communication on long freight trains can be included.

Train Lighting

P. J. Callahan, supervisor of car and locomotive lighting on the Boston & Maine, read the report of the committee on train lighting. The subject of belt clearances, which caused much discussion at the semi-annual meeting of the association held last June in Atlantic City, was taken up and minimum clearances between axle pulleys and car girders and between belts, end sills and brake beams were recommended. Numerous other recommendations were also made concerning axle pulleys, pulley centers, generator shaft bearings and voltage drop.

Locomotive train lighting occupied a large part of the report. The different sub-divisions of this subject, such as turbo-generators, conduit and wiring on both locomotives and cars were outlined in considerable detail and illustrated with photographs of actual installations.

The discussion concerning clearances showed that there was a wide divergence of opinion. Difficulty of coming to an agreement concerning mounting of axle pulleys and generator belts on the center line of the car was also encountered and the report was finally referred back to the committee to prepare recommendations for body hung machines.

The matter of lamp voltage became the chief center of interest in connection with locomotive train lighting. The committee had stated in the report that it felt that 32 volts was the proper voltage for this service, inasmuch as the great majority of car lighting equipment is 32-volt apparatus. This was vigorously opposed by representatives of various roads who felt that the voltage drop in trains of eight or ten cars would seriously affect the intensity of the illumination. Sixty-four volts were advocated by this contingent as being best suited to this class of lighting. It was pointed out, however, that by properly arranging the wiring 32-volt lamps could be used on either a 32-volt or a 64-volt system. It was finally agreed to accept the locomotive lighting portion of the report as information with the understanding that the committee would be guided by the discussion in preparing recommended practices covering the points discussed for presentation at the next meeting.

Electric Welding and Heating

The report of the committee on electric welding and heating was presented by F. H. Williams, assistant test engineer of the Canadian National. The report was brief, consisting of recommended additions to be placed in the manual. These include the fabrication of steel by arc welding, heat treating, and a number of chapters on metallurgy.

There was comparatively little discussion of this report although Mr. Lunn of the Pullman Company described a method of welding by means of which he believed that warping stresses in certain welds could be overcome by peening each successive layer of beads before adding the next layer. A specimen of welding as applied to structural steel work was demonstrated showing the great tenacity of welded joints under heavy deforming loads.

The report was accepted.

Electrical Equipment

The report of the committee on safe installation and maintenance of electrical equipment was by far the longest report of the convention. It was presented by G. T. Johnson, assistant electrical engineer of the New Haven. The report went into great detail regarding the installation of electrical equipment. A large portion was devoted to methods of grounding electrical conductors.

Another section of the report concerned battery charging plants. General requirements for rooms where batteries are located, charged and worked on were described at length and definite specifications for the construction of acid-proof battery room floors were given in detail. The care of both lead and alkaline batteries was fully outlined.

The report concluded with a complete description of the Schaefer method of resuscitation from electric shock.

The use of water in flushing storage batteries was discussed at some length in the discussion of this report and the fact was brought out that while distilled water was recommended by battery manufacturers, it was sometimes possible to use the local supply without going to the expense of distilling water. It was, however, stated that this should only be used after chemical analysis had shown it to be fitted for this purpose. The report as a whole was referred to the committee on the manual with instructions to take out of it such material as was suitable for use in the manual.

Illumination

L. S. Billau, assistant electrical engineer of the Baltimore & Ohio, and the chairman of the committee on illumination, presented the report on this subject. The committee recommended the revision of the manual and that the report on the development of train lighting lamps, locomotive lighting lamps and incandescent lamps for general service be accepted as information and the subjects continued. The light distribution obtained from old clear bulb lamps was compared with the new inside frosted ones and a comparison of the demand for train lighting lamps of various types of the years ending July 1, 1925, and July 1, 1926, was given in detail. Distribution curves showing the effect of different kinds of reflectors were included in the report.

The committee touched upon the subject of floodlighting of railroad yards and outlined the methods that had been used for this purpose. It did not feel, however, that a definite standard for floodlighting could be adopted yet, since there was such a wide variation in the different types of yard lighting studied.

Self-Propelled Vehicles

It was recommended that a 75-watt car lighting lamp with the inside frosting be added to the line of lamps and after some discussion this recommendation was adopted. The recommendation that the 250-watt, 32-volt, P-25 headlight lamps for locomotives in road service be made standard and be removed from its present classification as an alternate standard was also adopted. A lengthy discussion on the relative merits of S-14 and S-17 locomotive cab lamps indicated a divided opinion although the majority was apparently in favor the S-14 lamp for this purpose. It was not adopted as a standard however, but the representatives of the various roads were earnestly requested to make more extensive tests with the S-14 lamp so that more definite information could be obtained regarding its desirability for use in locomotive cabs.

The report of the committee on self-propelled vehicles was brief. President Wanamaker spoke earnestly upon the subject and emphasized the importance of instruction books on maintenance. It was finally decided to request the manufacturers of the various types of self-propelled cars to prepare suitable books for the specific maintenance of their several equipments and refer these to the association for approval. If these books meet with the approval of the association, a statement to this effect is to be included in the books. This was made in the form of a motion which was voted upon and adopted by the association.

Automatic Train Control

The subject of automatic train control was handled by a committee headed by F. E. Starkweather, electrical engineer of the Pere Marquette. A number of general suggestions were made regarding power supply, inspection, records and maintenance. The report also included a short list of questions together with answers which the committee offered as information. A large amount of tabular data was included in the report indicating the number of miles of track and number of locomotives that have been equipped for train control as well as the various types of equipment used. The committee did not feel, however, that the train control situation had developed sufficiently far to warrant the adoption of standards at present and therefore, recommended that the report be accepted as information only.

The discussion was confined to a comparatively small group of members, but those who took part spoke at considerable length on train line leakage and split reduction in applying brakes, especially in the handling of long freight trains. The relative merits of superheated and saturated steam with relation to its use in the turbo-generator which furnished the power for the train control system were discussed. Those who had experience with the superheated steam were of the opinion that the slight efficiency gained was more than offset by trouble resulting from the governor valves on the turbine.

Locomotive Lighting

L. C. Muelheim, general headlight supervisor of the Baltimore & Ohio, presented the report of the committee on locomotive lighting. About half of the report was concerned with the capacities of turbo-generators in connection with the installation of train control equipment. Although the committee believed that larger sizes than 500-watt machines would be needed to take care of train control apparatus and other electrical equipment which is apt to be installed subsequently, it felt that further study should be given to the subject and, therefore, did not make any definite recommendations with regard to turbo-generator capacities.

The committee recommended that the 100-watt inside frosted lamp be given a more thorough trial for service on switching locomotives, as such tests as have been made indicate that this particular lamp may be useful for this purpose.

Photometry of headlight reflectors is being carried on but considerably more work will be necessary before definite standards can be recommended.

Most of the discussion on this subject was centered upon the locomotive headlight lamp. Representatives from a number of roads claimed that they had trouble with lamps not giving satisfactory service. Investigation of some of these cases developed the fact that faulty regulation of the generator voltage was responsible for some of the lamp failures. One road at least has installed inexpensive voltmeters in the cab of each locomotive equipped with train control encountered apparatus, and since this was done, much of the trouble has been eliminated.

The Manual

The report of the committee on the manual was presented by L. S. Ballau and concerned itself principally with the method of procedure for revising it. Special stress was put upon uniform and standard forms for presenting committee reports with the idea of simplifying the work of preparing certain parts of the reports for inclusion in the manual.

Supply Men Elect Officers

At the election of the Railway Electrical Supply Manufacturers Association the folowing officers were chosen: President, W. H. Fenley, Kerite Insulated Wire & Cable Company; senior vice-president, George R. Berger, Gould Storage Battery Company; junior vice-president, Wm. A. Ross, Pyle National Company; secretary-treasurer, Edward Wray, Purchases and Stores. The new members of the executive committee are Russell Murphy, Square D Company; H. C. Gump, Graybar Electric Company; and H. A. Morrison, Simmons-Boardman Publishing Company.

The exhibit of the supply men on display during the convention occupied considerably more space than usual, a total of 60 manufacturers being represented. A list of the exhibiting companies, together with the products shown and the names of the representatives present, are included in the general news section of this issue.

An Executive Order issued by President Coolidge, allows employees of the government's Alaska Railroad permanently residing in municipalities on the line of the railroad to become candidates for municipal office therein, provided the attention required by such employment does not, in the judgment of the general manager of the railroad, interfere with the regular and efficient discharge of the duties of their position on the railroad. The order was issued on the recommendation of the Secretary of the Interior and the general manager of the road.

Photo Courtesy Canadian National Rys.

Prince Nicolas of Rumania at the Throttle of a C. N. R. Locomotive

Eastern Trainmen's Wage Hearing

Men from ranks testify that work and hazards increase and that wages are lower than industries pay

THE working conditions of conductors and trainmen in road and yard service were set forth in testimony given before the board of arbitration at the hearing in New York which began on October 28 and continued all this week to consider the request for an increase in wages, amounting to approximately 20 per cent, made by the trainmen's and conductors' organizations on behalf of members employed on eastern railroads. There are about 89,000 men concerned in the proceedings. The hearing is being conducted before the first arbitration board to function under the Watson-Parker law. The request for increased wages was made on February 2 (see *Railway Age* of February 6, page 383) and was refused by the carriers. Under the new law the case went to the board of mediation and when this board was unable satisfactorily to settle the case, the two parties to the dispute appointed two representatives each to sit on the board of arbitration. These four members were supposed to select two more as representatives of the public, but, failing to reach an agreement on the public representatives, the board of mediation appointed Edgar E. Clark, of Washington, and W. D. Baldwin, of the Otis Elevator Company, to act as the representatives of the public. The carrier's members of the board are R. V. Massey, general manager, Eastern region of the Pennsylvania, and W. A. Baldwin, vice-president of the Erie, and the members representing the employees are D. L. Cease, editor, the Railroad Trainman, and E. P. Curtis, secretary of the Order of Railway Conductors. Mr. Clark is acting as chairman.

L. E. Sheppard, president of the Order of Railway Conductors, representing employees in that branch of service, made a statement at the beginning of the hearing in which he described the attitude of the men as not being one of discontent, nor of resentment toward their employers, but rather a feeling of disappointment at not being able to reach an earlier agreement. He said that the experience of employees with arbitration had not been conducive to an optimistic view of such a means of settlement. However, he expressed himself as being hopeful that the present board would handle the question scientifically and intelligently and that a settlement might be reached through which the men would get compensation based on what was exacted from them and on the intelligence and diligence they displayed in the performance of their duties.

Ask Increase for Heavier Trains Such as Enginemen Have for Larger Engines

Mr. Sheppard then summoned witnesses in effort to show that the productivity of the conductors' labor is greater today than it was a few years ago. He offered witnesses with the intent to show that, in comparison with the increased work and responsibilities of the conductors, wages had not increased proportionately. He made the point that, while the enginemen have a schedule of payment whereby their compensation is automatically increased when they operate a heavier engine —that is, as their responsibility increases—conductors cannot have their compensation increased in proportion to the additional service they might render by reason of heavier trains. Other points made by witnesses for the conductors were that it took a longer time at present to be promoted; that men were away from home a large part of the time; that there was no allowance for away-from-home expenses, and that the duties of the conductor were requiring an increasing use of intelligence.

J. H. Evans, formerly employed in the Department of Labor and, since 1922 with the Order of Railway Conductors, was the first witness called. He presented a series of exhibits for the purpose of showing that conductors now handle approximately 400 car miles per trip more than they did in 1921, and that the conductor now is in charge of about 159,000 gross ton miles per trip, taking the figures for April, 1926, whereas he was in charge of 143,000 gross ton miles in July, 1921, which was representative of the average then, according to the witness.

Cites Wages in Other Industries

He testified that the basic hourly rate of conductors had dropped from 80.5 cents in 1921 to 77 cents an hour in 1926, while other trades, according to figures introduced by the witness, had increased the rates of pay. He introduced statistics tending to show that men in the building trades were better paid than conductors—bricklayers getting $1.56½ an hour in 1926; laborers, 85 cents; carpenters, $1.267; cement finishers, $1.32; hod carriers, $1.00; painters, $1.30; and plasters, $1.59. All of these received basic rates of pay from nine to 37 cents an hour higher than in 1921.

W. W. Apgar, conductor on the New York, New Haven & Hartford, was the next witness called to the stand. He outlined the duties of a conductor on a day's run, from the time he looked at the bulletin board and began preparatory work thirty minutes before train time until he signed the service record at the completion of his day. His testimony tended to bring out the point, which the representatives of the conductors are trying to show, that there is an increasing amount of "book work," or records to be kept, and that as a matter of fact, the thirty minutes allotted to the conductors before starting time, for which they are paid, is insufficient for that work and, according to the testimony of Mr. Apgar and others, a certain amount has to be done on the conductors' own time.

Slow Promotion Complained Of

Thomas H. Craig, conductor for the New York Central, running between Buffalo and New York, testified that he had entered the service in 1893 as a brakeman and after a year was promoted to freight conductor, a position he held for ten years. He was then freight and extra passenger conductor for ten years, and it has only been the last four years that he has had a regularly scheduled, assigned run as passenger conductor. He said that his monthly compensation on his run between Buffalo and New York amounted to about $295, and testified that he had to eat four meals away from home on each trip, and rent a room away from home. His other expenses arose from the purchase of two uniforms a year, the last one of which cost him $43 and the cap $3.25.

Mr. Craig said that, on the run from Buffalo to New York, there are four different enginemen and firemen, while the one conductor runs all the way through. By computation on the basis of miles run, Mr. Sheppard

brought out through the witness that the engineers' total compensation on a trip from Buffalo to New York would be about $30.23; the firemen's compensation, $23.55, while the conductors' would be $19.62.

Expenses Away from Home

L. Parker Titus, conductor for the Central of New Jersey, and A. B. Jones, conductor for the New York Central, gave testimony similar to that given previously with relation to the expenses away from home, the increase in amount of work done and the length of time a conductor had to be in service before promotion. H. E. Zimmerman, passenger conductor for the Erie, also gave similar testimony, but added information as to the length of runs made. He said that there was one run of 316 miles between Salamanca, N. Y., and Marion, O., where the conductor worked on a twelve hour shift, which entailed a long layover away from home, about thirty hours, in fact, and made necessary the spending of about $35 a month for board.

John Knight, freight conductor for the Baltimore & Ohio, said that he made a trip of 111 miles with a train consisting of about 150 cars, and that during the run a number of stops were made to set out cars. And while this was switching work, since the crew was considered as being in through service, the men were paid at a through rate, which was less than for switching work.

H. F. McGuire, freight conductor for the Hocking Valley, in testifying as to his working conditions, said that in his opinion double tracking moved freight faster and cut down the amount of over-time a conductor might earn. He said that his experience was that he had made 1 hour and 15 minutes overtime in 15 days. Before the Hocking Valley had laid double track on the division where he worked between Columbus and Toledo, O., he said that his over-time had been greater.

Charles Moeller, a passenger conductor on the Hocking Valley, gave testimony similar to that of Conductor Apgar, of the New Haven, to the effect that the paper work necessary in keeping records required the giving of his own time beyond that of the thirty minutes prior to starting a run. He said that it took 45 minutes of his own time, to take care of the work. He gave testimony to show that he was away from home about one-half of the time.

Trainmen Say Their Efficiency Has Increased

W. G. Lee, president of the Brotherhood of Railroad Trainmen, opened the case for that organization, and said that the increased productivity of the men warranted the increase of 20 per cent asked in their pay. He spoke only briefly, turning over the presentation of the case to W. N. Doak, vice-president of the trainmen's organization, after making the points that the case for the conductors and that for the trainmen were closely related, because "the brakeman of today was the conductor of tomorrow and it might be said to be true that the reverse was the case in a number of instances." He said that there were conductors who had been reduced to rank of trainmen because there were no runs available for them in their higher capacity. He said that there would be no extended presentation of statistical testimony; that he preferred to have the case made for the trainmen by having them come in off the road and tell their stories to the board.

Mr. Doak, making a preliminary statement to the board, said that the trainmen's organization was convinced that the request for increased wages was justified by the increased efficiency of the men; that they had not received the same fair consideration accorded employees in other industries; that the hazards encountered and skill required in the performance of duties justified the increases in pay; that the men should be paid more to enable them to live, and not barely that, but to enable them to maintain "the standards of living enjoyed by a good American citizen"; and that increases would be in the interest of the public as well as be beneficial to the employee. It was his contention that the higher wage would not prove a burden to the carriers to the extent that would be embarrassing. He said that the railroad man was responsible to industry and the shipping public at large, and that it was in the public interest that the employee be properly paid, for dissatisfied and discontented railroad employees meant that transportation eventually would suffer.

On the point of the cost of living, Mr. Doak said he would "leave to the conscience and pocketbook of each member of the board whether or not there had been an increase in prices of necessities." He said that rents had doubled and trebled in New York City so that no trainman could now afford to live within the city limits, and that the same fact was true of most urban centers in the east. On the matter of increased tonnage under the charge of trainmen and conductors, he said that the railroads were now handling five per cent more ton miles with 8.4 per cent less roadmen than ten years ago. He asked the board to consider the trainmen's right to more money for the extra work necessary in handling the increased parcel post traffic, and said that trainmen and baggagemen were being grossly imposed upon by the extra amount of parcel post they were now required to handle.

Yard Service More Difficult, Claim

Leon Clark, of Wilmington, Del., a yard conductor for the Pennsylvania said that volume of tonnage had increased as was evidenced by the fact that two engines were required to handle trains where one engine might have done the work a few years ago. He outlined his duties, the making out of train and accident reports, checking up the train and the crew, and said that his duties were greater now than in 1921 because the trains were longer and the men were further apart on the train. He cited instances of where it was necessary to use newspapers in daytime signaling from one end of the train to another in order that they might be distinguished.

He testified that there were dangers encountered by trainmen such as slipping from icy or wet surfaces in bad weather and that of "kicking brakes," when car brakes were handled with a brake club. Mr. Walber, chairman of the conference committee of managers, representing the carriers, brought out that the witness had not encountered instances of injury through slipping from icy surfaces, but that he had known of cases where brake clubs kicked back and caused injuries.

The witness testified that in former years there was what was called "spot" time when the crews had nothing to do around the yard. Now, he said, if there is no work the crew is sent off duty. He testified that his rate of pay was $6.72 for eight hours, and that with his family of two children, wife and mother, he found it necessary to work seven days a week. He said that he might live on six days' work, but he would have to figure very closely to do so. Referring to the brake clubs, he said their increase in length and strength was an indication that car loads were heavier and that a heavier club was needed to hold them.

J. H. Siedell, of Willard, O., a local freight conductor for the Baltimore & Ohio, gave testimony purporting to show that his working conditions were such that he was away from home two-thirds of the time; that his expenses were from $3 to $3.50 a trip when away from home; and that he got about $6.60 a day. He said that trains had increased in size and tonnage and that every added car meant an added responsibility. He

said that what he wanted was to be able to earn enough when he could work to be able to save against a day when, if he ever lost his job, he could not get another because of the age limit rule, requiring men to be under 40 when entering on their duties.

Tells of Friedly Relations with Officers

E. W. Burch, a yard conductor for the same road, handling trains over the "hump," testified from memory that in one yard there were 8,000 more cars handled in January of this year than in the same month a year ago, yet the increased number was handled in 367 less engine working hours. He said that this had been accomplished because the men in the yard had a real desire to perform better service and there was excellent co-operation between the men and railroad officers. He testified that it was his experience that men worked hard and continuously during their eight hour shifts in the yard.

D. F. Traverse, brakeman on the Boston & Maine, and W. G. Badger, brakeman on the Cleveland, Cincinnati, Chicago & St. Louis, both gave testimony as to earnings of men in their class of service. Mr. Traverse said that men in through service on his line got about $4.84 a day with no over-time for months at a stretch, and that their away-from-home expenses amounted to $2.15. Mr. Badger submitted some figures he had kept for a period of thirteen months, showing that he earned $2,223.02 in that period and that his away-from-home expenses amounted to $271.95, or about 12 per cent of his earnings. The witness next gave a detailed account of a typical run between Indianapolis, Ind., and Mattoon, Ill., for the purpose of showing that he had to pay close attention to trains, had to get orders, handle switches, perform service cutting out and picking up cars and be a communicating means between the engineman and the agents at different points.

Mr. Doak said that he wished to state for the record that while a number of references had been made to the dangers of accident, the trainmen would put in no statistical testimony, but would request that if the board of arbitration desired any particular detailed information about accidents that they have recourse to information on file with the Interstate Commerce Commisison. Mr. Walber, for the carriers, said that he had no objection to the board's doing that—in fact, that he had expected testimony with regard to accidents and had come prepared to file statistics that were on file with the commission. He pointed out that the figures were kept for the railroads nationally and that if Mr. Doak had no objection to letting the national figures stand for the eastern railroads, the carriers had no objection. Mr. Sheppard, for the conductors, said that he was willing that the matter of accident statistics be handled in such a manner, although he wished to reserve the right to put in additional figures if he wished.

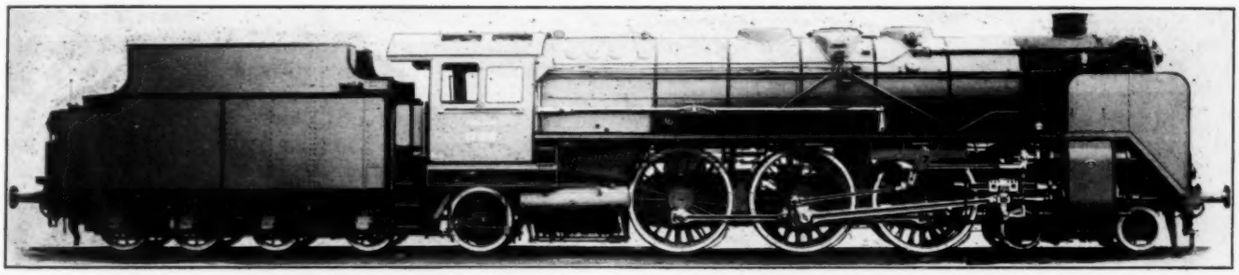
Robert Stitt, a freight brakeman for the Erie, said that there was a good deal of pick-up and set-out service performed on his division, but that there was a rule that three such stops had to be made before any rule applied that gave the men pay for such work. He said that he made overtime fairly regularly. He offered figures to show that out of ten trips in September, he made overtime on nine of them.

N. J. Fitzgerald, brakeman for the New York Central, testified that the company was laying more stress than even on rules requiring the watchfulness over trains ridden and passed by employees. He told of a new set of signals to communicate to crews of passing trains, and said that employees felt that they were held responsible for the good condition of moving equipment.

He said that it was his impression from observation and contact with traveling freight and passenger agents and auditors that long haul, or through passenger business was increasing, but short haul business was decreasing. He said that he understood from those sources with which he came into contact that there was a revenue of over $8,000,000 from the Twentieth Century Limited in 1925. On cross examination, Mr. Walber brought out that the witness meant by short haul traffic, that up to fifty or sixty miles. When the witness said that he understood that the carriers had considered ways to supplant their local trains, where business was being done at a loss, with some form of gasoline driven vehicles, Mr. Walber remarked that there was "no issue" on that point.

It was indicated that the railroads would not begin the presentation of their testimony until the latter part of this week, at the earliest.

Erie Suburban Train at Hawthorne, N. J.



Standard Four-Cylinder Pacific Type Locomotive for the German State Railways

Standard Locomotives for the German State Railways

Builders are co-operating with the Central Railway Administration in design of new power

LONDON, Eng.

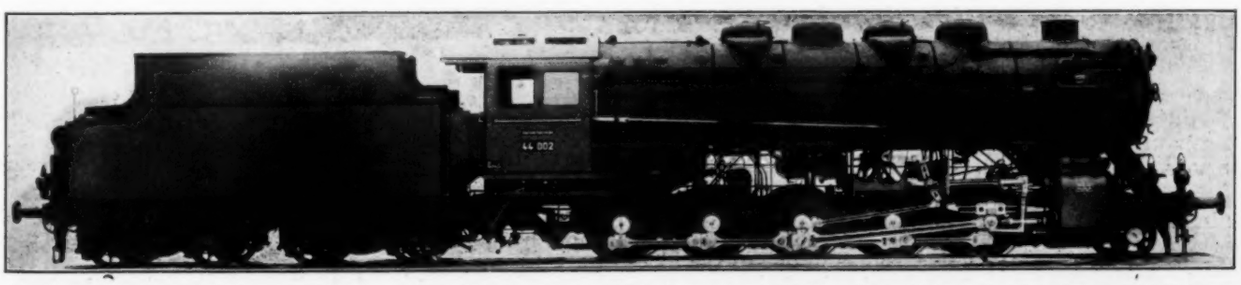
TWO locomotives, a four-cylinder 4-6-2 type and a three-cylinder, 2-10-0 type, built from new standard designs, were recently completed by Henschel & Son, Cassel, Germany, for service on the State Railways of that country. Both of the locomotives are the first of their respective types to be built according to standard design; in fact the four-cylinder 4-6-2 type is the first standard locomotive to be built for the State Railways. The amalgamation of the railways of Germany into one system brought together a multiplicity of types and designs of locomotives that made the problem of operation and maintenance quite difficult. This multiplicity of types and designs was in itself considered unnecessary and was largely due to the independence of the railway administrations of the various federal states. In addition, no attempt was ever made to have the parts of locomotives of similar types interchangeable with each other. These conditions required a disproportionately long time for repairs and the keeping in stock of extensive stores. As a result, the various German locomotive builders with the co-operation of the Central Railway Administration, established a central technical office where designs for the new standard State Railway locomotives have been worked out.

The principal features of the standard designs are the accomplishment of a certain uniformity of the various types and the interchangeability of as many parts as possible. All parts for each type of locomotive are produced according to uniform tolerance gages and templates, making it possible to fit new parts from stock to any locomotive regardless of where it was built. Henschels have designed and applied for German patents on a number of special measuring and testing appliances designed to obtain greater accuracy and to facilitate the work of production. Some of these devices, such as testing stands for paired wheels and axles, crossheads, connecting rods, journal bearings, etc., were exhibited at the Munich Traffic Exhibition, June to October, 1925.

The Four-Cylinder Compound Pacific Type Locomotive

The 4-6-2 type four-cylinder compound locomotive has a load per axle of 40,000 lb. and is the heaviest passenger locomotive on the German State Railways. It has a tractive force of 26,400 lb. The diameter of the high pressure cylinders is 18⅛ in. and the low pressure 28⅜ in. both having a piston stroke of 26 in. The driving wheels are 78¾ in. in diameter.

The boiler is of the straight top type and carries a working steam pressure of 227.6 lb. It is equipped with copper firebox and staybolts. The flues are in two sizes, having diameters of $5\frac{5}{16}$ in. and 5⅝ in., and are arranged in five rows, one above the other for the reception of a Schmidt type superheater. There are also 129 2-in. tubes having an overall length of 19 ft. 3 in. The barrel of the boiler carries a steam dome and a feed dome provided with an angular grid water purifier. A preheater is placed transversely in the forward upper end of the smoke box. The air and feed pumps are placed in the lateral recesses in the smoke box, as shown in one of the



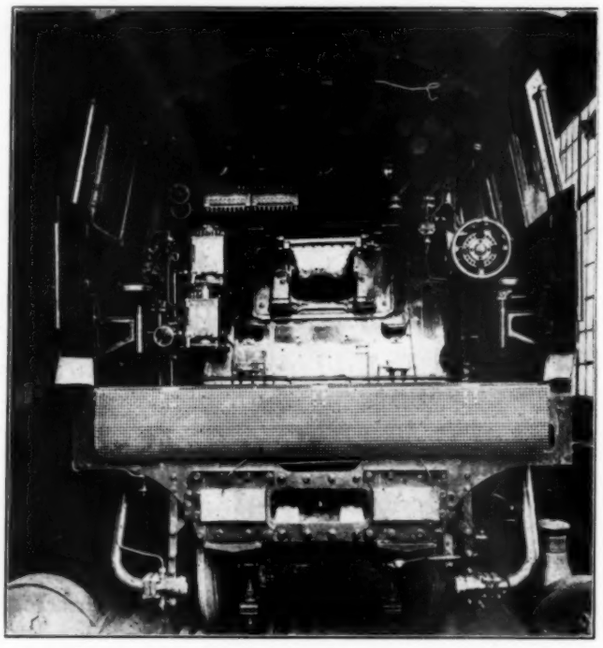
Three-Cylinder Decapod Locomotive of Standard Design Built by Henschel & Son, Cassel, Germany—This Locomotive is Also Designed to Be Built with Two Cylinders

illustrations, in order to interfere as little as possible with the view of the enginemen. Water is fed to the boiler by means of an injector and Nielebock feed pump. The valves for operating the injector, steam heating device, coal and ash-pan spraying devices, etc., are placed on a steam connection located on the left-hand side of the firebox. The steam used for operating the air and steam pumps, the whistle and the blower, is taken from a steam connection located on the left-hand side of the smoke box. The grate consists of cast iron bars of standard design and is arranged so that the central part is used as a dump grate, operated by a spindle. The ash pan is of ample proportions and is provided with air dampers and bottom doors.

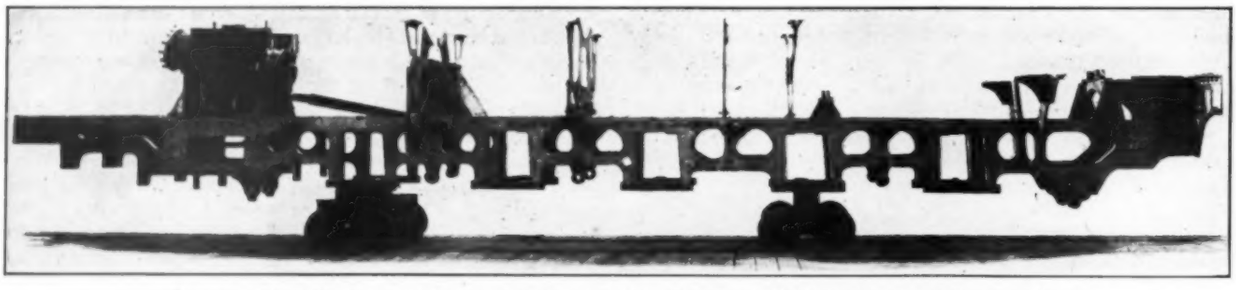
The frame of the locomotive, which is similar in design to that of the Decapod type, consists of two bars, $3\frac{1}{8}$ in. thick, finished on both sides. The boiler is connected to it by the saddle of the inside cylinder, three waist sheets and the front and back firebox carriers. The front end of the frame is supported on a plate which slides on another plate carried on a four-wheel engine truck of standard design. The rear end of the frame is carried on a two-wheel trailer having radial adjustment.

The pistons of all four cylinders are connected to the main driving wheel, with center lines of the two high pressure cylinders between the frames inclined. The high pressure cylinders form one casting with their respective steam chests. The low pressure cylinders are placed on the outside and are in a horizontal position. Steam distribution is effected by means of piston valves provided with small spring packing rings. The high pressure valves are about $8\frac{1}{8}$ in. in diameter and have inside admission; the low pressure valves are a little over $13\frac{3}{4}$ in. in diameter and have outside admission. They are actuated by the standard Heusinger valve gear* with transmission shafts from outside to inside. The by-pass valves on the steam chest are controlled by air and the cylinders are equipped with the usual drain and safety valves. The high pressure by-pass valves when open also serve as a starting feature, the steam flowing directly through the steam chest of the high pressure cylinders to the low pressure.

The locomotive is equipped to provide steam heat for passenger coaches, and has gas lights and a speedometer.



Interior View of the Cab of the Standard Pacific Type Locomotive



Frame with Cylinders and Boiler Attachments for the Three-Cylinder Decapod Locomotive

The tender has a water capacity of 7,925 gal. and a coal capacity of seven tons. All wheels of the tender as well as the driving wheels and engine truck wheels of the locomotive are braked with a single shoe operated by the Knorr air brake equipment. The total wheel base is 75 ft. $7\frac{1}{2}$ in.

The Three-Cylinder Decapod Type Locomotive

The 2-10-0 type locomotive, shown in one of the illustrations as a three-cylinder type, is also built as a two-cylinder locomotive and the experience to be gathered from this locomotive in actual service will eventually determine as to whether or not one of the two designs will be discarded. All the fittings as well as the brake equipment, preheater and pump, lubricating pumps, by-passes, sanders, part of the journal boxes, the front driving axle, as well as the tender, are interchangeable with the standard four-cylinder Pacific type locomotive described in the preceding paragraphs.

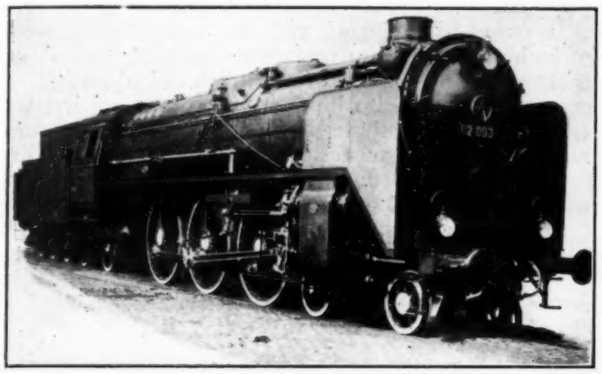
The boiler of the Decapod type locomotive is of the same type and construction as that of the Pacific type. The tubes are of the same diameter and arranged in five rows, one above the other for a Schmidt type superheater, but there are 127 2-in tubes, as compared with 129 for the 4-6-2 type. The length over the tube sheets is also 19 ft. 3 in. The first course carries the feed dome in which is an angular grid water purifier and the second course carries the steam dome in which is a Schmidt and Wagner type throttle. The boiler for the Decapod locomotive is equipped with the same accessories and appliances as that of the Pacific type, which are located in the same manner. The design of the grate and ash pan is also the same.

The construction of the frame, as well as the boiler and cylinder connections, is shown in one of the illustra-

* This gear is the same as the Walschaert valve motion.

tions, and as stated in a preceeding paragraph, this construction is essentially the same as that of the Pacific type. The front end of the frame is supported on the engine truck known as the Krauss design, a feature of which is the sliding king pin guide which allows for lateral motion. All suspension springs are arranged below the journal boxes of the driving axles, the springs for the engine truck and the first three pair of drivers and those of the two rear pair of drivers being interconnected by equalizers in the usual manner.

The center line of the inside cylinder is inclined, the connecting rod being coupled to the second axle which is



Front View of the Standard Four-Cylinder Pacific Type Locomotive—This is the First Standard Locomotive to Be Built for the German State Railways

designed as a crank axle. The outside cylinders lie horizontally, the connecting rods being coupled to the third pair of drivers. Steam distribution is effected by piston valves of 11 1/16 in. diameter having small spring rings and simple inner admission. Each of the three piston valves is actuated by a normal type Heusinger valve gear. The Decapod locomotive is also equipped with the Knorr type air brake with an auxiliary brake. The wheels are sanded in the forward direction by means of a compressed air sander. It is also equipped with a steam heating device, gas lighting apparatus and a speedometer. The tender has a water capacity of 8,400 gal. and a coal capacity of seven ton. The total wheel base of the locomotive and tender is 74 ft. 5 in.

Standard Locomotives for German State Railways

TABLE OF DIMENSIONS, WEIGHTS AND PROPORTIONS OF THE STANDARD DECAPOD AND PACIFIC TYPE LOCOMOTIVES FOR THE GERMAN STATE RAILWAYS

	Decapod	Pacific
Railroad	German State Railways	German State Railways
Builder	Henschel & Son	Henschel & Son
Type of locomotive	2-10-0	4-6-2
Service	Freight	Passenger
Cylinders, diameter and stroke	(3) 23 5/16 in. by 26 in.	(2) 18 5/16 in. by 26 in. (H.P.) (2) 28 3/4 in. by 26 in. (L.P.)
Valve gear, type	Heusinger	Heusinger
Weights in working order:		
On drivers	218,400 lb.	132,800 lb.
Total engine	250,100 lb.	249,800 lb.
Tender	168,500 lb.	143,500 lb.
Wheel bases:		
Rigid	11 ft. 1 7/8 in.	15 ft. 1 1/8 in.
Total engine	31 ft. 7 1/16 in.	40 ft. 8 1/4 in.
Total tender	18 ft. 8 3/8 in.	15 ft. 7 in.
Wheels, diameter, outside tires:		
Driving	55 1/8 in.	78 3/4 in.
Front truck	33 1/2 in.	33 1/2 in.
Trailing truck		49 1/4 in.
Boiler:		
Type	Straight top	Straight top
Steam pressure	200 lb.	227.6 lb.
Fuel, kind	Coal	Coal
Length over tube sheets	19 ft. 3 in.	19 ft. 3 in.
Grate area	50.6 sq. ft.	48.5 sq. ft.
Heating surfaces:		
Firebox	193.76 sq. ft.	183 sq. ft.
Tubes and flues	2,357.24 sq. ft.	2,377 sq. ft.
Total evaporative	2.551 sq. ft.	2,560 sq. ft.
Superheating	1,076 sq. ft.	1,076 sq. ft.
Comb. evaporative and superheating	3,627 sq. ft.	3,636 sq. ft.
Tender:		
Water capacity	8,400 gal.	7,925 gal.
Coal capacity	7 ton	7 ton
General data estimated:		
Rated tractive force	47,100 lb.	26,400 lb.
Speed, m.p.h. at 1,000 ft. piston speed	37.8	54.8
Weight proportions:		
Weight on drivers ÷ total weight engine, per cent	87.4	53
Weight on drivers ÷ tractive force	4.64	5.03
Total weight engine ÷ comb. heat. surface	69	68.7
Boiler proportions:		
Tractive force ÷ comb. heat. surface	12.98	7.27
Tractive force × diam. drivers ÷ comb. heat. surface	716	573
Comb. heat surface ÷ grate area	71.8	74.9

Annual Accident Bulletin for 1925

THE Interstate Commerce Commission has issued accident bulletin No. 94, a pamphlet of 117 large pages, containing the record of collisions, derailments and other accidents occurring on the railroads of the United States during the 12 months ending with December 31, 1925. The principal totals in this bulletin were published in a preliminary statement issued last spring and were reported in the *Railway Age* of April 17, page 1091. The total number of persons killed in all classes of accidents was 6,766 and of injured 137,435. Most of the totals in the tables showed increases over 1924; and the number of passengers killed in train accidents, 83, was more than twice the total reported in 1924. Injuries to employees (shopmen, trackmen, etc.) in non-train accidents were, however, 6.3 per cent less than in 1924.

One summary not appearing in the preliminary notice was that showing train accidents, table 61, page 43. The totals appearing in this table covering the five classes of train accidents are as follows:

	No.	Damage to Ry. Property	Killed	Injured
Collisions	5,166	$5,502,468	124	1,762
Derailments	12,759	15,057,949	226	1,911
Other train accidents	2,860	1,589,040	68	239
Total	20,785	$22,149,457	418*	3,912

*Passengers, 83; employees, 232; other persons, 103; totals, 418.

The data in this bulletin concerning accidents at highway grade crossings are considerably amplified as compared with preceding years. The table showing the total number of crossings in the country now presents the number of crossings, protected and unprotected, in 48 items, one for each state in the Union; and this table includes the number of automobiles registered and the casualties at railroad crossings per 10,000 automobiles registered.

The total number of highway grade crossings, 233,633, is 923 greater than at the beginning of 1925. The large numbers representing increases in the second column of the table and decreases in the third column do not in all cases represent *crossings*, but only changes from the "unprotected" to the "protected" class, or vice versa, the Interstate Commerce Commission having changed its classification or terminology. This table (see first column of the following page) shows:

The total number of protected railway crossings, (crossings of railways with railways), includes 4,124 protected by interlocking devices, 454 protected

by derailing appliances on electric lines, 421 protected by automotic crossing signals, and 2,064 protected by gates or watchmen.

Under the caption "railway with highway," the total number protected, 27,161, includes 3,378 protected by gates, operated 24 hours a day; 2,920 protected by gates, operated less than 24 hours a day; 1,271 protected by watchman, on duty 24 hours a day; 6,631 protected by watchman, on duty less than 24 hours a day; 5,710 protected by audible and visible signals; 5,649 protected by audible signals; and 1,602 protected by visible signals.

GRADE CROSSINGS, CLASS I RAILROADS—1925

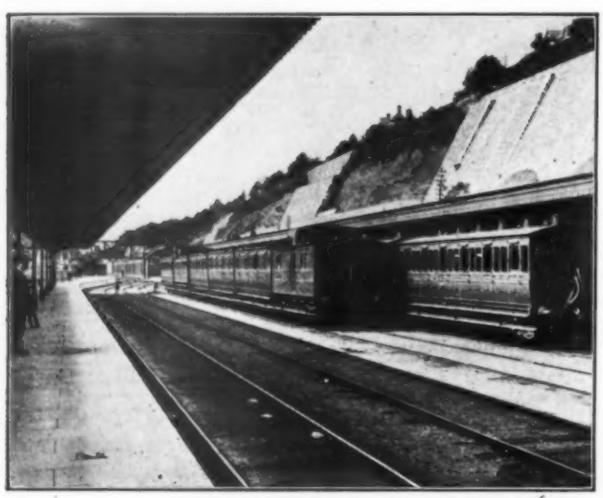
	Number of Crossings			
	At Beginning of year	Added in 1925	Eliminated in 1925	At End of year
Railway with railway				
Protected	5,144	227	173	5,198
Unprotected	5,009	118	171	4,956
Total	10,153	345	344	10,154
Railway with interurban or street railway.				
Protected	1,932	170	192	1,910
Unprotected	2,492	77	148	2,421
Total	4,424	247	340	4,331
Total of above	14,577	592	684[a]	14,485[b]
Railway with highway				
Protected	26,991	2,026	1,776	27,241
Unprotected	205,719	6,662	5,989	206,392
Total highway	232,710	8,688	7,765[c]	233,633[d]

Note: [a] Includes 22 eliminated by separation of grades.
[b] Includes 45 protected and five unprotected in Canada.
[c] Includes 185 eliminated by separation of grades.
[d] Includes 80 protected and 798 unprotected crossings in Canada.

A table published for the first time, No. 97, page 78, shows *by roads;* the total locomotive miles, total passenger locomotive miles and revenue passengers carried. The bulletin contains the usual comparisons with preceding years, included in which comparisons are 17 graphic diagrams.

The statement showing the totals of persons killed and injured has a supplement classifying, for each road, the 12 killed and 21 injured who are reported to have been suicides or attempted suicides, or as jumping from trains to escape from custody, or while mentally deranged.

THE DENVER & RIO GRANDE WESTERN has offered a prize for the best exhibit of seed potatoes at the San Luis Valley seed show to be held at Alamosa, Colo., on November 10 and 11.



Ewing Galloway

Station at Queenstown (Cobh), Ireland

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading in the week ended October 23 amounted to 1,209,043 cars, only 1,120 less than the total for the week before, which established a new record, and 88,366 cars more than were loaded in the corresponding week of last year. As compared with 1924 the increase was 95,990. This makes the twenty-second week this year in which the loading has exceeded a million cars and brings the total for the year to date up to 44,041,481 cars, as compared with 42,338,949 cars in the corresponding period of last year.

Increases as compared with the corresponding weeks of both of the past two years were reported from all districts except the Central Western, which had a slight decrease as compared with 1924. Loading of livestock and coke was slightly less than that for the corresponding week of last year and grain and grain products, livestock and forest products showed decreases as compared with 1924. Coal loading was especially heavy, 227,518 cars, an increase of 38,362 cars as compared with last year. Ore loading, 65,303 cars, increased 14,795 cars and miscellaneous freight, 456,221 cars, showed an increase of 22,340 cars. The summary, as compiled by the Car Service Division, follows:

REVENUE FREIGHT CAR LOADING—WEEK ENDED SATURDAY, OCTOBER 23, 1926

Districts	1926	1925	1924
Eastern	275,586	251,220	256,284
Allegheny	240,744	212,617	215,193
Pocahontas	62,516	57,964	53,687
Southern	169,217	161,463	155,850
Northwestern	183,471	168,700	167,033
Central Western	184,133	182,742	184,537
Southwestern	93,376	85,971	80,469
Total Western districts	460,980	437,413	432,039
Totals all roads	1,209,043	1,120,677	1,113,053
Commodities			
Grain and grain products	55,815	48,424	72,516
Live stock	40,249	41,193	42,346
Coal	227,518	189,156	194,404
Coke	13,097	13,895	9,979
Forest products	72,935	71,861	73,466
Ore	65,303	50,508	40,026
Mdse. L.C.L.	277,905	271,759	257,649
Miscellaneous	456,221	433,881	422,667
October 23	1,209,043	1,120,677	1,113,053
October 16	1,210,163	1,106,009	1,102,300
October 9	1,184,862	1,106,036	1,088,956
October 2	1,185,524	1,113,283	1,077,748
September 25	1,182,940	1,121,025	1,087,954
Cumulative total, 42 weeks	44,041,481	42,338,949	40,084,000

Car Loading in Canada

Car loadings in Canada continue to maintain an unprecendented high level. During the week ended October 23, loading fell off 3,184 cars from the high record of the previous week. Grain loadings were lighter by 1,757 cars.

Miscellaneous freight was also lighter with a difference of 924 cars. Lumber was lighter by 244 cars and pulpwood by 376 cars. Livestock and ore were the only two commodities to show increases.

Compared with the corresponding week of 1925, total loadings were heavier by 5,463 cars.

	Total for Canada			Cumulative totals to date	
Commodities	Oct. 23 1926	Oct. 16 1926	Oct. 24 1925	1926	1925
Grain and grain products	21,179	22,936	18,383	346,713	329,185
Live stock	3,160	2,917	3,238	90,148	99,405
Coal	9,271	9,328	8,171	244,824	165,408
Coke	466	461	435	15,377	11,985
Lumber	3,608	3,852	3,637	153,564	151,263
Pulpwood	1,544	1,920	1,303	112,893	108,508
Pulp and paper	2,138	2,315	2,157	100,174	85,677
Other forest products	3,012	3,063	2,977	130,152	118,307
Ore	2,108	1,945	1,719	73,377	59,358
Merchandise, L. C. L.	17,956	17,965	16,617	688,404	644,117
Miscellaneous	17,581	18,505	17,923	602,209	540,852
Total cars loaded	82,023	85,207	76,560	2,557,835	2,314,065
Total cars received from connections	39,863	37,361	35,345	1,566,484	1,397,417

W. G. Besler Elected Chairman

Central of New Jersey elects as president R. B. White, who became senior vice-president last January

AT the annual meeting of the board of directors of the Central of New Jersey held on October 28, William G. Besler who has been president of the company since 1914 was elected chairman of the board of directors and chairman of the executive committee and R. B. White who came to the property from the Baltimore & Ohio in January, 1926, as senior vice-president, was elected president.

Mr. Besler started his railroad career in 1880 as a trainmaster's clerk on the Chicago, Burlington & Quincy when he was 16 years of age. In four years he had advanced to private secretary to the general manager, in which position he saw the necessity for acquiring a technical education whereupon he requested and was given a furlough and left the service to enter the Massachusetts Institute of Technology in the class of 1888. Returning to the Burlington, he re-entered the service as chief dispatcher and trainmaster, subsequently became superintendent of the St. Louis division and remained with the road for a period of 11 years. He then came east as a superintendent of the main line of the Philadelphia & Reading in 1899, and held that position for about a year when he was promoted to general superintendent. In March, 1902, he was made general manager of the Central of New Jersey, a majority stock interest in which the Reading had acquired in 1901. In December, 1902, he was elected vice-president and general manager and on May 1, 1914, was elected president and general manager.

W. G. Besler

R. B. White

Roy Barton White, like Mr. Besler, has received his railroad training in the operating department. He is only 43 years of age which means that he is one of the youngest railroad presidents in the United States. Like Mr. Besler, he also started his railroad career at the age of 16. His first railroad employment was as telegraph operator and agent on a property later acquired by the Cincinnati, Hamilton & Dayton. He came up in the familiar line of promotion through the positions of train dispatcher, chief dispatcher, chief clerk to the general superintendent, continuing as superintendent when the C. H. & D. was acquired by the Baltimore & Ohio. In 1921 he was promoted to general superintendent of the latter at Baltimore and in 1923 was appointed general manager of the New York terminal lines. This was the position he held in January, 1926, when he was elected senior vice-president of the Central of New Jersey. Much significance was given at the time to the selection of a Baltimore & Ohio man for such an important position in the Central of New Jersey's official family as indicating an increasing community of interest between the two properties.

The Central of New Jersey during Mr. Besler's connection with it, has made very substantial progress, its gross revenues advancing from $16,000,000 in 1902 to about $60,000,000 in 1926. It has paid 12 per cent dividends since 1910. It has assets of extraordinary value in its terminal properties on New York Harbor, the acreage of which is believed to be the largest of those

of any railroad reaching that important traffic center. As a matter of comparison, the area of the terminal properties in Jersey City is about equal to the area of Manhattan Island, south of Canal street, and important from the standpoint of the future is that this property, in spite of the development that has taken place during Mr. Besler's administration, is still only about three-fifths developed.

The Central of New Jersey is controlled by the Reading Company through the latter's ownership of a majority of the capital stock. The Central gives the Reading its entry into the New York district for passenger and freight business although it is true that the Reading also has its own water front terminal, used principally for coal at Port Reading. In addition, that part of the Central main line between Allentown, Pa., and Phillipsburg, N. J., forms a link in the route used by the Reading as its connection with the New England lines. This particular route is used largely for bituminous coal, originating on the Baltimore & Ohio and moving via Shippensburg, Pa., and it is not generally realized that the Central carries nearly as much soft coal as it does anthracite. That part of the Central main line between Bound Brook, N. J., and Jersey City is now again being used by the Baltimore & Ohio for its New York passenger service and in addition a portion of it is used to give access to the Baltimore & Ohio's extensive freight terminals on Staten Island. There is nothing in connection with the function that the Central of New Jersey performs as a carrier by rail that exceeds in importance the use or development of the terminal properties and the extent to which the lines of the Central supply access to the terminals of the two other railroads mentioned, as well as through its working arrangements with all other trunk lines reaching New York.

When Mr. Besler came to the Central of New Jersey in 1902 as general manager, the road was predominantly an anthracite carrier. The history of all the hard coal roads in the past twenty years is one of how these roads have tended to rely less and less on their anthracite traffic and have engaged in the transportation of a wider variety of commodities. In 1902, anthracite supplied one-third of the Central's total revenue tonnage; in 1924 it supplied but one-quarter. Whereas over this period the anthracite tonnage had increased 47 per cent, the bituminous tonnage had increased no less than five times, the merchandise tonnage had doubled and the total revenue tonnage had increased 111 per cent. At the same time the passengers carried—the Central has an extensive suburban service—had increased by 91 per cent.

The changes necessary to meet this change in the character of the traffic as well as its expansion have been extensive. They have included a notable development of the terminal properties. Every bridge on the railroad has been rebuilt, including the bridge across Newark Bay, now nearing completion, which cost $14,000,000 and is the largest bridge of its kind in the world. Practically all of the road's passenger trains now have all-steel equipment. No progress of this kind is ever completed.

The company has in contemplation at this time, for instance, projects of a total estimated cost of about $16,000,000. There are included important grade crossing elimination projects, the most important of which is the one at Elizabeth, N. J., which will cost about $8,000,000. The company plans extensive enlargement of its Elizabethport shops.

The most noteworthy thing about Mr. Besler's administration probably is the fact that from 1902 to 1924, as a result of the terminal development and the general upbuilding of the railroad property, the Central of New Jersey increased its investment in road and equipment $100,187,803, which expenditure was accomplished without any increase in the company's capital stock or funded debt with the exception of equipment trust certificates. In the same period the company paid out $66,731,276 in dividends which means that for every dollar paid in dividends one dollar and a half was put back into the property for additions and betterments. The amount devoted to capital improvement during Mr. Besler's administration has totaled no less than $365 a share on the capital stock.

Mr. Besler has built up an important asset in the form of loyal employees. This, as well as his ability to maintain a friendly attitude on the part of the patrons of his property, was given unusual recognition on the occasion of the celebration of his 20th anniversary as an officer of the Central of New Jersey. The article in the *Railway Age* of April 8, 1922, reporting what occurred on this occasion bore the significant title "Making Good with the Employees and the Public." Mr. Besler happens, notably, to be the father of the veteran association organizations on the American railroads. This movement originated on the Central of New Jersey in 1904 and the idea for the inception of which he was responsible now includes veteran organizations upon railroads which extend from coast to coast and from the Great Lakes to the Gulf. Mr. Besler is also a prominent member of the New York Railroad Club, is a past president and has for some years been a member of its subjects committee. He is first vice-president of the American Railway Association, a member of the board of directors, and the member of the executive committee related to the Purchases and Stores Division.

Mr. Besler during his term of years as president of the Central of New Jersey had to change the road from one carrying principally anthracite coal to one carrying a much more diversified traffic. From now on the most important problem of the railroad for a while will be to determine its place in railway consolidation plans. The majority control is owned by the Reading. This stock, however, is in the hands of trustees who have been ordered to dispose of it unless the Interstate Commerce Commission should decide that continuation of control by the Reading is in keeping with the commission's consolidation plans. It is the general presumption that if consolidations do occur the Central of New Jersey is more likely to be found to have become a part of the Baltimore & Ohio system than any other.

William G. Besler was born on March 30, 1864, at Galesburg, Ill. He entered railway service in 1880 as trainmaster's clerk on the Chicago, Burlington & Quincy, and served later as yardmaster and chief train dispatcher and as private secretary to the general manager. In 1884, he was given a furlough to attend the Massachusetts Institute of Technology. He returned to the railroad as chief train dispatcher and later became a trainmaster, then division superintendent of the St. Louis division. In 1899, he became a division superintendent of the Philadelphia & Reading (now the Reading Company). In 1900, Mr. Besler became general superintendent of the same road, which position he held until 1902, when he became general manager of the Central of New Jersey. In 1903, he was elected vice-president and general manager in entire charge of operation. In May, 1914, he was elected president and until February 1, 1922, served also as general manager.

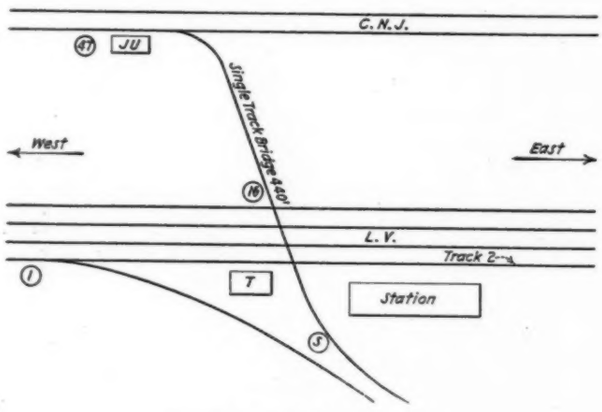
R. B. White was born at Metcalf, Ill., on August 8, 1883, and received a high school education. He entered railway service in 1900 as a telegraph operator on the Indiana, Decatur & Western (now Cincinnati.

Indianapolis & Western). In 1902 he was promoted to train dispatcher at Indianapolis. In 1908 he became chief dispatcher for the Cincinnati, Hamilton & Dayton at the same point and the following year was appointed chief clerk to the general superintendent at Cincinnati. In 1910 he was promoted to superintendent at Indianapolis. Five years later he was appointed to a similar position with the Baltimore & Ohio at Flora, Ill., and he later served in the same capacity at Seymour, Ind., Philadelphia and Baltimore. On April 15, 1921, he was promoted to general superintendent at Baltimore, and in June, 1923, he was appointed general manager of the New York Terminal lines of the Baltimore & Ohio. In January, 1926, Mr. White was elected senior vice-president of the Central of New Jersey.

Report on Bethlehem Collision

W. P. BORLAND, director of the bureau of safety, has reported to the Interstate Commerce Commission on the crossing collision of passenger trains at Bethlehem, Pa., on September 27, when a passenger car was overturned, killing eight persons and injuring 40.

In this collision, briefly reported in the *Railway Age* of October 2, page 645, eastbound passenger train No. 306 of the Central of New Jersey, moving at low speed, ran into the side of eastbound Lehigh Valley passenger train No. 6, at the crossing of the two roads, (No. 6 moving at about 15 miles an hour) overturning one coach. Engineman Schmidt of train 306 is held responsible, he having passed a stop signal (signal 16) 165 ft. short of the point of collision. This signal is partly obscured by the truss of the bridge on which it is located, and Schmidt claimed that it was clear when he approached, but was changed when he got within about 30 ft. of it; but numerous witnesses testified that the signal for train No. 6 was clear; and the interlocking was perfect, showing that both signals could not have been clear at the same time.



Crossing at Bethlehem, Pa.

The circumstances surrounding the collision will be understood from an examination of the sketch. The signal at 47, cleared by the operator at JU, gives right only as far as signal 16. This latter signal is 21 ft. above the rail level and the lens is 2 ft. 4¾ in. to the left of the inside edge of the bridge framework. When in the stop position the semaphore blade extends outward 13 in. beyond the outside of the bridge framework. This projecting end can be seen from JU Tower and also by the approaching engineman, provided he is keeping a very careful lookout. There is no derail connected with this signal. The location of the interlocking tower for the Lehigh Valley crossing is indicated by "T" and at "S" there is another signal. The signal at "1" was clear for the Lehigh Valley train.

The fireman of train 306, who was preparing to leave the engine at Bethlehem station, did not see the indication of signal 16 nor did he observe the approach of the Lehigh Valley train. He said that Engineman Schmidt always called the indication of a signal when it was at stop but never called proceed signals; in this particular case the engineman said nothing about signal 16 and the fireman thought, therefore, that it must be clear.

The schedule of train No. 306 had been changed the day before, making the time at JU 5:53 a. m., five minutes later than before; and the train actually passed that point five minutes ahead of time. The movement of the train thus ahead of time did not cause the collision, but, says the report, the fact remains that had the schedule been observed the collision would not have occurred. An officer of the road said that, so far as the Jersey Central was concerned, this train lost its time-table right after reaching JU and being diverted to the single track connection leading to the Reading and, therefore, there was no irregularity in proceeding over the connection at 5:48.

The conclusion of the report, discussing the absence of a derail at signal 16, says:

Originally there had been a derail at this point but on account of the existing physical conditions it was considered to be a menace rather than a safeguard and for that reason was removed on October 30, 1922. It is not believed that a recommendation for the restoration of this derail is in any way warranted. On the other hand although signal 16 is not well located, from the standpoint of visibility, yet if it were located at or west of the entrance to the bridge it is probable that the rear end of a train stopped at the signal would foul the Jersey Central main tracks, resulting in delay. It does not appear, however, that the arrangement as now in effect is one which provides the greatest degree of safety consistent with the operating difficulties presented, and it is recommended that all movements over this single-track connection be required to come to a full stop before passing over the Lehigh Valley tracks. If it is not desired to stop at this particular point, then the present signal layout should be so rearranged as to insure that a signal could not be given to authorize a movement from the Jersey Central main tracks to the Reading tracks, or vice versa, until the entire route from one end of the connection to the other end has been lined for the movement in question. The general idea of these recommendations was discussed with representatives of the Public Service Commission of Pennsylvania and met with their approval.

AFTER EXTENDED CONFERENCES the Department of Commerce has officially indorsed the standard contract terms and conditions for the warehouse industry, as approved and adopted in conference by the representatives of the warehouse, railway, shipping and banking industries on April 30, at Washington. These terms and conditions are expected to eliminate waste in distribution by establishing uniformity of practice in the warehouse industry and associated industries. In this work the Department of Commerce has acted as a co-operative agency by means of which the interested people might meet and come to an agreement. Official approval by the department was given after a sufficient number of bankers, railwaymen, shippers, and other users of warehouse forms had given their written approval.

Returning Injured Men to Service

AN IMPORTANT indirect factor in connection with reportable accidents has been the tendency of many men to remain away from duty for a greater length of time, in many cases, than the nature of the injury would warrant. Dr. W. L. Hartman, chief surgeon, Michigan Central, who is well known in railway medical circles as one of the earliest advocates of the periodical physical examination, touched upon some of the pertinent facts of this subject, in an address before the Steam Railroad Section of the National Safety Council, which was held in Detroit last month. An abstract of Doctor Hartman's talk follows:

The subject of the surgeon's viewpoint on returning men to service is one on which a great deal could be said. My short experience of 25 years in dealing with accidents, and I think that others will agree with me in this, is that practically 80 per cent of the accidents happen in the first two hours of the first half of the working day and the last two hours of the last half. Those accidents that occur in the first two working hours are due, in a large majority of cases, to the employee having his mind concentrated on some subject other than his work. This is often due to the home environment or to something which has happened just prior to his leaving for work. He may be in financial distress, have illness in his family, or have had a quarrel with some member of his home, and his mind is concentrated on that subject rather than on his work. Therefore, his mind is running single track and it takes from one to two hours to divert it from that siding and bring it out on the main track, where he will concentrate on the work that is before him, and the result is that, in the meantime, an accident is liable to occur.

To my mind, a great many of these accidents could be prevented if we could get closer to our employee's home environment and the problems that go to make up his mental attitude. Just how this could be brought about is a matter well worth considering.

The accidents that occur in the last two hours of the working period are largely due to over-fatigue, resulting from some physical or mental defect, and for this condition the remedy is at hand. The avenue that leads to the correction of these defects lies in seeing that the employee is not only physically and mentally fit, but that he is kept physically and mentally fit, and this is obtained through the periodical physical examinations, whereby we discover any disabilities and through proper treatment and observation see that they are overcome. Merely making a periodical physical examination gets us nowhere unless we follow up the defects that are found and see that they are corrected. Of course, due to human equations, however cautious we may be, we will probably always have a certain amount of accidents, but there is no doubt but that the majority of these can be prevented.

We will now deal with the man who has had an accident and is about to be returned to work. In my opinion, these men should often be given some light service until they are able to resume their regular duties, thus reducing the chance of an accident. In the case of an employee who has been injured and has had a long-drawn-out convalescence, my experience has been that if his duties could be changed to those of a lighter capacity, his recovery would be more rapid than if he were allowed to wait around until such time as he is able to take up his regular duties. In the case of the man who is performing some light duties which will keep his mind occupied and away from his physical defects, the psychology is that he will be thinking of what he is doing instead of his defects, and, therefore, his recovery is more rapid. It also shows him that his employer is trying to do something for him and is treating him as a human being, and this diverts his mental attitude to the channel where he is anxious to recover sufficiently to be able to resume his old occupation. While, during this period, he is perhaps not earning what his employer pays him, in the end he is an economic asset to his employer.

My experience has been that at times too little attention is paid to what the surgeon might have to say regarding returning the injured to duty. Due consideration should be given to what the surgeon has to say about the physical condition of the injured. There have been cases where men who knew nothing about surgery have put their opinions above those of the surgeon. These cases are few and far between, being, perhaps, brought about through lack of confidence in the surgeon. If, however, this is the case, my advice would be to change and obtain men to do this work in whom they would have confidence.

The surgeon sometimes underestimates the time of disability. This is often done through the idea that the surgeon may have that he is helping his employers, but this is certainly a mistake, and it is more economical in the long run to over-estimate a disability than to underestimate it. This you can readily see, for the reason that ofttimes, if the estimated disability is made too short, an early and equitable adjustment is not made and later on becomes a more expensive proposition than if the proper estimate were made at the outset. I thoroughly believe in an early adjustment, as my experience has been that it matters not how honest the employee may be, and by the way, most of them are honest, his recovery is more rapid where an early adjustment is made than where the time is allowed to drag on without settlement.

One of the points that I wish to stress and which is all-important is co-operation from the higher officers down to the man directly in charge of the injured employee. My experience has been that this has not been practiced as thoroughly as it should be. Of course, we all realize that large corporations are considered by employees and the public in general as cold-hearted and indifferent, and the belief is that all they are interested in is what they can get out of the employee; that they are blind to human kindness and the welfare of their fellowman.

We who are more closely connected know that this is not true; therefore, it is our duty to dispel this distorted idea in the minds of our employees and the public and show them that large corporations have a heart and are not just looking to squeeze the last bit of service out of the employee in order to increase the exchequer of the company. By eliminating this fallacy from the mind of the injured, he will not feel that he is obliged to go outside and employ an ambulance-chaser in order to protect his interests and obtain what he thinks is right for his respective injury.

THE TEXAS COURT OF CIVIL APPEALS holds that the state's right to require the installation and operation of interlocking devices at grade crossings is not ousted by the Interstate Commerce Act, §26, as amended by the Transportation Act, § 441, and the State Railroad Commission is authorized to enforce the installation of such devices at crossings under Tex. Rev. St. 1911, arts. 6701-6705. Article 6702 does not impose the expenses of the installation solely on the company whose line was last built. The devices may be required where the main line of one road crosses the side or spur track of another. Article 6703, excepting "crossings of side tracks" does not refer to the crossing of a side track by a main line.—International-Great Northern v. Railroad Commission (Tex. Civ. App.), 281 S. W. 1084.

Passenger Traffic Officers Meet

Methods of improving rail service to meet private automobile and bus competition described

PASSENGER service on the railroads must be made more attractive through added comforts and conveniences if the railroads expect to regain the traffic lost to private automobiles and buses, according to reports made at the 70th annual meeting of the American Association of Passenger Traffic Officers at Hot Springs, Ark., on October 29 and 30. The meeting, which was attended by 100 passenger traffic officers of railroads and steamship companies, was presided over by President L. W. Landman, passenger traffic manager of the New York Central. It was welcomed to Hot Springs by F. Leslie Boyd, manager of the Hot Springs Chamber of Commerce. In response, Mr. Landman gave a brief resume of the history of the association which had its first meeting at Pittsburgh, Pa., in 1855, and adopted its constitution at Baltimore, Md., in 1856. He also described the activities of the fraternal society of the association which provides death benefits for the members. Since the organization of the society in 1901 the membership has increased from 125 to 461, while 190 members have died and their beneficiaries have received $189,605.

Both Pullman and Coach Service Must Be Improved

It was unanimously agreed that to offset private automobile and bus competition, particularly the former which has made the greatest inroad into steam railroad passenger revenues, the railroads' service will have to offer attractions in the form of conveniences, comforts, schedules, rates or innovations which the others cannot duplicate. Many phases of this subject were considered and included the substitution of rail motor cars for steam trains, the operation of bus lines by carriers, the refinements of service to increase the attractiveness of rail travel, the pooling of competitive train service, advertising and co-operation with "Save to Travel" groups, tourist bureaus, steamship companies, etc.

It was generally conceded that the railroads should co-operate with the "Save to Travel" groups. Charles H. Smith, executive vice-president of the Save to Travel Association, New York, outlined the progress made by his association. At the present time there are 666 banks co-operating and of these 253 are paid members. The association recently wrote to 1,537 banks to interest them in the plan and found that 253 have "Save to Travel" or vacation clubs, while 937 expressed the desire to start clubs. Thirty-six railroads are now members of the association.

To make the plan a success, he said, the railroads, the steamship companies, the banks and the Save to Travel Association, each must do its part. The association is a service organization, made possible through the co-operation of banks, railroads and steamship companies. It operates on an actual-expense basis and not a profit-making one. It is not interested in profit-making in any manner. The railroads should popularize and advertise the slogan, "Open a vacation travel account in your bank." They should place posters to this effect along station platforms and in stations; place this slogan on all time tables; include the idea in their newspaper advertisements; allot display space to the Save-to-Travel plan at exhibits held throughout the country; embody the idea wherever and whenever they use window displays at city and hotel ticket offices; enlist the co-operation of all passenger agents in every city to work in conjunction with the local banks, preparing information, assisting in interesting high school students, teachers, clubs, fraternities, organization, etc., in group trips; and assist in distributing circulars to the public.

The steamship companies also should popularize and advertise the slogan, "Open a vacation travel account in your bank." They should enlist the aid and co-operation of the 7,000 steamship agents throughout the United States, having each of them assist the local banks in the same manner as the agents of the railroads; include the idea in their newspaper advertisements; assist in the distribution of literature to the public about the plans; display the slogan in their agency windows; embody the idea in their descriptive literature and booklets which they prepare and send out; and allot display space to the Save-to-Travel movement with their exhibits.

The banks should popularize and advertise the slogan "Open a vacation travel account at this bank." They should embody the slogan in their local advertisements and capitalize on the activities of the two groups shown above; exhibit travel displays in their windows; distribute attractive and carefully prepared circulars describing the Save-to-Travel plan in various ways; assist in the placing of posters on bulletin boards in schools, clubs, fraternities, churches, offices and manufacturing plants in their community; assist in placing articles on the advantages of travel and proper vacations in house organs and local publications; and join with other banks in their community in a co-operative advertising plan at small per capita cost.

The Save-to-Travel Association should co-ordinate all factors into a unified program; pass on suggestions to all groups and to individual units of each group; serve as a clearing house of information; prepare and distribute posters, circulars, window display material, etc.; give publicity to the movement; and carry on mechanics of operation entailed in the entire program listed above.

Reduced Fares Do Not Stimulate Business

Some of the officers questioned Mr. Smith as to how the railroads could inform the depositor of places of interest on a particular railroad when the railroads were not furnished with the names of the depositors. He said that the association sends the literature to the banks and they in turn to the depositors. When asked if there was any way of determining the business accruing to the railroads Mr. Smith compared the plan with the Christmas Savings plan which is supported by many merchants, none of whom can measure the business they secure through that plan. He explained that there was no assurance that the money would be used to purchase transportation and that if it were used for transportation it might be for railroad, steamship, bus or privately-owned automobile.

A reduction in fares was suggested as a means of stimulating short haul traffic but there was a difference of opinion due to the experience with week-end excursions. Some members reported that these excursions

are not profitable and that only 40 per cent of the tickets sold are honored on the return. Excursions as a means of competing with buses it was felt are a failure. The statement was made that by reducing round trip tickets there is a decrease in one-way sales, while at the same time there is a decrease in revenue. L. A. Blatterman, general passenger agent of the Wabash, in commenting upon low rates excursions, said:

"Operating as we do in the middle west, the patronage of the low rate excursions of the Wabash cannot be compared very well with those of the more densely populated territory in the east, but we generate sufficient business to warrant quite a schedule of excursions during the summer.

"Compared with the whole, it is seldom that the Wabash finds justification for the operation of special trains and as the most attractive centers on the road for excursions are places like Chicago, Detroit and St. Louis, we avail ourselves of regular service with additional equipment. Of course, this sometimes necessitates additional sections. From experience extending over a period of years, a constant scrutiny of expenses is necessary in connection with these excursions. This includes the added expense of additional cars into terminals where station costs approximate ten to fifteen dollars per car. We believe we have kept our expenses down to a minimum and because of the waning attraction generally of such low rate excursions as are operated without special attractions due primarily to the auto, the matter of economical operation is more in need of close attention than ever before.

"An extensive schedule of low rate excursions into commercial centers must be so designed as to protect regular business as far as possible. With the regular Sunday limits usually used, this is pretty well protected, but where a limit of more than two or three days is used, dependence must be placed on fares used, in which in our opinion should exceed in some measure the regular one-way fares.

"We have devoted considerable time to organized excursions for fraternal and commercial bodies, in such cases using the fares generally supplied for our regular excursions, operating them on a guarantee basis sufficiently high to provide a substantial revenue and allowing promoters the advertising expense. Some of these have been quite successful.

"The question as to what measure of reduction should be used for special excursions is one which I believe has never quite been answered. The Central Passenger Association has a basis which we believe is too low and the Western Passenger Association one that is too high. I incline to the opinion that many excursions should be operated at fares to be governed by conditions of distance and local territorial competition, as the circumstances warrant. Of course, with the many varying interests, the association scales we are using work out fairly well and probably equalize the patronage of excursions as well as could be expected under the circumstances.

"The Wabash operated 349 excursions in 1926, which is an increase of 38.5 per cent over 1925. The revenue increased 8.6 per cent while our total passenger revenue shows an increase of only 0.11 per cent or approximately the same as last year. In 1926 we operated a total special train mileage of 13,009 miles which is 7.8 per cent of the total mileage used in handling special excursion business."

A committee was appointed to study round trip local fares and others.

Little Hope Expressed for Regaining Lost Traffic

There was considerable doubt that the use of rail motor cars will regain the lost traffic which now uses buses and private automobiles, but it was agreed that the use of rail motor cars has reduced the cost of operation per mile. In some cases this saving has been from $1 to 28 cents and this saving within a short time will offset the cost of new equipment. Where this class of equipment is used it is common practice when large parties require baggage cars or sleepers, to use a steam train. In the experience of some roads it was found that the use of motor cars on single track often interferes with the movement of other traffic. One road reported that the use of rail motor cars on a portion of its main line had proved satisfactory. None of the companies using motor cars experienced a gain in traffic after their adoption.

It was the consensus of opinion that the majority of the passenger traffic lost by the railroads now use private automobiles and more thought should be given to this form of competition and less to buses. The operation of bus lines by carriers as a means of regaining traffic was considered but few roads were experienced in this practice. One road which has co-ordinated bus service with train service stated that the results were satisfactory. Experience showed that if bus rates are near the level of the railroads' the business is diverted to privately owned automobiles and if low enough to be attractive the buses do not profit. It was stated that the railroad bus should be looked upon as a means of holding the present traffic rather than a method of reclaiming lost business. This was supported by the experience of one road which did not regain its business after adopting buses. This road lost as much business in a state where there was no bus competition as in another where there was keen bus competition and since the inauguration of railroad buses in the latter territory little if any of the lost traffic was regained.

In order to compete with both buses and privately-owned automobiles there should be refinements of service to increase the attractiveness of rail travel. This should include improvements in the type of both Pullman and coach equipment and greater attention to detail in conveniences which are provided for the comfort of passengers. As the average person travels by automobile because of the comforts it provides, it was felt that railroad equipment should be designed to obtain better ventilation, cleanliness, less noise, a more even temperature and windows which open and close easily. The experience of some roads showed that innovations in equipment attract attention. People write the Louisville & Nashville expressing their appreciation of the Pan-American because the train is different and do not comment on the standard equipment of other trains on the system. This is due to the fact that the Pan-American carries specially designed cars to take care of local traffic. The Baltimore & Ohio reported satisfactory results in the use of a specially designed coach which is operating between Washington and New York. The seats in this coach are form fitting chairs. To develop convenience for the passenger it was recommended that the schedules of trains be shortened.

Consideration was given the pooling of competitive train service and this practice was thought advisable if the difficulty arising through the division of revenue and operating costs could be eliminated. Some roads now pool and the practice has proven satisfactory.

Advertising to induce rail travel was discussed and it was shown that only $13,644,355, or 1.3 per cent of the total passenger revenue of all railroads in the United States was spent in 1925 for this purpose. Some members felt that the amount spent for advertising should be based on the total of both passenger and freight revenue. On this basis and using the same percentage, a larger sum would be available for advertising and the railroads would benefit as it is easier to sell a well-advertised product. The joint advertising by two or more roads of the same rate to the same point was advocated.

Officers elected for the ensuing year were: President, J. N. Cornazar, passenger traffic manager of the St. Louis-San Francisco, St. Louis, Mo.; vice-president, L. M. Allen, vice-president and passenger traffic manager of the Chicago, Rock Island & Pacific, Chicago; and secretary (re-elected) W. C. Hope, passenger traffic manager of the Central of New Jersey, New York. The next meeting of the association, which will probably be in November, will be held at Havana, Cuba.

General News Department

The Railway Club of Pittsburg, at its annual meeting on October 28, elected as president for the ensuing year George W. Wildin, Westinghouse Air Brake Company; secretary, J. D. Conway.

The Cincinnati Railway Club will hold its next meeting at the Hotel Gibson, November 9. Colonel C. O. Sherrill, city manager of Cincinnati, will read a paper on "Problems of the City Government."

The International Railway Fuel Association has established permanent headquarters in Room 516 Railway Exchange building, Chicago, moving the office from Omaha, Neb., following the appointment of **L. G. Plant** as secretary-treasurer, succeeding J. B. Hutchinson. The new headquarters will serve as a meeting place for the various committees of the association throughout the year.

A new record in tunnel driving far exceeding any previous performance was accomplished by the forces of A. Guthrie & Company on the Cascade Tunnel of the Great Northern, when 1,157 ft. of heading was driven during the week ending October 11. This record compares with 984 ft. in the same tunnel for the week ending September 30, and 932 ft. for the best record made in the Rogers pass tunnel.

"Modern Cars and Locomotives" is the title of a pamphlet which has been issued by the Pennsylvania Railroad, giving illustrated descriptions of 14 of its principal types of locomotives, eight types of passenger-train cars and eight of freight service cars, together with some brief notes on the history of this branch of railroading. The circular has been prepared as the best means of responding to numerous requests from educational institutions and elsewhere for information of the kind shown.

Five Strathcorna memorial fellowships on transportation, worth $1,000 each, offered annually by Yale University, are the subject of a circular which has been issued by the Dean of the Graduate School (Yale University, New Haven, Conn.,) advising aspirants to present their applications to him before March 1. Blanks will be sent on application. Preference is given to such persons, or to the sons of such persons, as have been for two years or more connected with the railways of the northwest.

A motion to dissolve the injunction granted by Judge A. M. Kent of the 103rd Judicial Court at Brownsville, Texas, on October 16 to the Southern Pacific to prevent the Missouri Pacific from running trains over certain tracks and property claimed by the Southern Pacific for use as a crossing near Harlingen has been filed in the district court at Brownsville. The motion, asking that the temporary injuction be dissolved, will be heard before Judge Kent on November 10. The temporary injunction restrains the Missouri Pacific from connecting the property mentioned with its main line or switch tracks. The Missouri Pacific contends that the Southern Pacific could cross at some other point.

Exposition of Power and Mechanical Engineering to Be Held December 6 to 11

The fifth national exposition of Power and Mechanical Engineering, including heating and ventilating, will be held December 6 to 11, 1926, at the Grand Central Palace, Lexington avenue and Forty-sixth street, New York. This is during the same week as the annual meeting of the American Society of Mechanical Engineers, which meets December 6 to 9, inclusive, and the American Society of Refrigerating Engineers, which will hold its sessions at the Hotel Astor for three days starting Tuesday, December 7. The education value of the exposition is being developed as far as possible as this annual event brings together not only the leaders in engineering and industry, but a considerable number of the general public who desire up-to-date information about developments in applied science. The exhibits themselves will consist largely of working units or models. In addition, a complete program of motion pictures has been provided showing a number of the larger and more recent developments in engineering. One of the exhibits will be under the auspices of the Museum of the Peaceful Arts, which is engaged in the development of plans for an industrial museum in New York City.

Predicts C. N. R. Will Soon Pay Its Way

In a speech delivered on October 24 at North Bay, Ont., Sir Henry Thornton, president of the Canadian National, definitely promised that within three years the National system will show net earnings equal to the annual interest charges on the railway's debt. In other words, Sir Henry declared that the net earnings of the system will increase from $35,000,000 in 1925 to more than $70,000,000 in 1929. Debt interest in 1925 amounted to $71,000,000.

Dinner for L. A. Downs

C. M. Kittle, formerly senior vice-president of the Illinois Central, and now president of Sears, Roebuck & Company, gave a dinner in honor of L. A. Downs, recently elected president of the Illinois Central, at the Chicago Club, in Chicago, on October 21. Short addresses were made by Mr. Kittle, George M. Reynolds, chairman of the Continental and Commercial National Bank, C. H. Markham, chairman of the Illinois Central, and Mr. Downs. The guests included leading Chicagoans in every branch of financial, industrial, commercial and professional activity.

An Investment Company for S. P. Employees

Employees of the Southern Pacific and companies in which the Southern Pacific owns a 50 per cent interest will be permitted to buy stock in the Railroad Securities Company, a corporation formed for that purpose. The organization will be conducted as an investment trust company, and investments will be made in a diversified list of securities in a manner intended to yield a fair return. The securities company has been capitalized for $3,000,000. Employees of 30 companies owned by the Southern Pacific, as well as those of the parent company, will be permitted to purchase stock and a minimum income has been set at which employees will be allowed to buy stock.

Railroad Magazine Editors Meet

The fifth semi-annual meeting of the American Railway Magazine Editors' Association was held at Savannah, Ga., on October 29, with an attendance of 50 representatives of railway employee magazines. All but three of the larger railway systems of the United States were represented. Business sessions were held at the De Soto Hotel, the party being welcomed by representatives of the Savannah Chamber of Commerce and the mayor of the city. Following the business sessions the editors were entertained at dinner at Bannon Lodge, by J. J. Pelley, president of the Central of Georgia. The annual meeting of the Association will be held in New York City next May.

Canadian Trainmen Lose in Wage Arbitration

Recommending that there be no increase in wages of the conductors, trainmen and yardmen of the Canadian Pacific and Canadian National, the board appointed to arbitrate the wage dispute between these employees and the companies has filed a majority report with the Canadian Minister of Labor.

This report is signed by Justice Hugh T. Kelly, of Toronto,

chairman of the board, and by Isaac Pitblado, the representative of the railway companies.

A minority report bearing the signature of David Campbell, of Winnipeg, representing the employees, recommends, among other things, an increase of 6 per cent in wages of conductors, trainmen and yardmen.

This increase was asked by the Canadian trainmen to put their wages on a parity with those of the United States railroads under the so-called "New York Central" basis.

"Enforce the Stop Laws," Says the A. C. L.

Circular 150 of the Atlantic Coast Line's series of educational leaflets, bearing the above title, discussing crossing dangers and appealing for the exercise of ordinary commonsense, continues as follows:

Practically all cities and towns have traffic regulations requiring automobiles to come to a full stop before entering busy streets or main arteries of traffic. Most motorists are quick to realize the value of such a law and comply with it faithfully. It is hard to understand why the motorist who observes city stop laws without even looking around to see if a policeman is watching, throws all caution to the winds as soon as he strikes the open road, and dashes across railroad tracks regardless of the ever present admonition to stop, look and listen. Last year, 1,784 people lost their lives simply because they, or the drivers of the automobiles in which they rode, were too stubborn, or too careless, to stop to see that no train was coming.

A number of states have laws requiring motorists to stop before crossing railroad tracks. Few of them, however, consistently enforce such laws. The result is that the laws are not generally obeyed, and that disastrous accidents continue. North Carolina's experience proved that lives are saved by the observance of laws requiring automobiles to stop at railroad crossings. During the first six months after a stop law was passed in that State it was generally observed. In that period the number of crossing accidents decreased 36 per cent, the number of persons killed decreased 50 per cent and those injured decreased 45 per cent. When it later became evident that the law was not being enforced motorists began to disregard it and the number of accidents and deaths increased.

Those states that have stop laws are under obligation to enforce them. The mere announcement that the stop laws would be enforced, would secure compliance with the laws by the majority of motorists. Arrest and conviction of a relatively few offenders would create the same wholesome respect for state traffic laws that most motorists have for traffic laws in towns and cities, and by far most of those lives now needlessly thrown away in highway crossing accidents would be saved.

Accident Review for a Half Year

T. H. Carrow, chairman of the Safety Section of the American Railway Association, has sent to each railroad a letter enclosing a condensed table of the totals which have been given in the accident reports issued by the Interstate Commerce Commission for the first six months of the current calendar year. He says, in part: Total persons killed on American railroads, 3,145, an increase of two; and 62,484 injured, a decrease of 3,090. Non-train accidents (shopmen, etc.) show a marked decrease (182 killed, 39,485 injured, as compared with 194 killed and 44,132 injured). A large percentage of master mechanics, master car builders, general foremen, foremen and other maintenance of equipment officers, have the accident situation in their respective shops and departments well under control, while many others are showing improvement from month to month. Getting men with minor injuries back on the job who would ordinarily lose more than three days has been an important item in the reduction of reported non-train accidents.

Employees injured in train service increased nine per cent, a most regrettable fact, says Mr. Carrow. Continuing, he says: Why is this increase, which is distributed among nearly all the causes? Are new men being properly trained? Are the rules being enforced? Are the older men, particularly conductors, looking after the new men? To what extent are the old men being injured? More particularly, are all reasonable means used to impress train and engine service employees with the necessity for constant care? Occasional letters outlining specific causes of accidents, to this class of employees, is an effective medium.

Accidents at highway crossings—1,065 killed and 3,110 injured—show an increase of 16 per cent over last year. "Is the locomotive whistle being sounded effectively and up to the crossing? Is Rule 103 being enforced? Is newspaper publicity being obtained by the various divisions to educate the public to approach crossings carefully? Are crossings being properly maintained and obstructions to view removed?"

In collisions, 69 persons were killed as compared with 51 last year; and the total injured also shows a large increase. "What can be done to improve the situation?"

The following totals in the tables show decreases as compared with the same six months in 1925:

Total persons killed in train accidents, 150 and 208; total in train service accidents, excluding casualties at highway grade crossings, 1,765 and 1,819; passengers killed in all classes of accidents, 63 and 97. Employees killed, all classes of accidents, 738 and 750.

Canadian Roads Report Large Earnings for September

Both the principal Canadian railway companies showed large net earnings for the month of September. The Canadian National showed a net of $4,915,259, bringing the total net earnings for the nine months ended September 30 up to $25,743,334. In 1925, the net earnings for the first nine months were $12,325,762. The increase this year is equal to 108 per cent. This is the largest total shown since the formation of the C. N. R. in 1922.

The Canadian Pacific reports net earnings for September of $6,448,823. This is the best showing ever made by the railroad in that month. Total net earnings for the first nine months of the year are $28,632,021, the highest since 1917, and represent a gain over the previous year of $6,996,099.

The heaviest traffic months of the year are still to come, and prospects are that both railways will turn in record earnings for the year.

Net Railway Operating Income for September 5.74 Per Cent

Class I railroads for September had a net railway operating income of $145,134,536, which was that month's proportion of an annual rate of return of 5.74 per cent on their property investment, or within a fraction of one per cent of the statutory rate, according to compilations made by the Bureau of Railway Economics. This compares with $135,251,054, at the rate of 5.42 per cent, for September of last year and brings the net railway operating income for nine months up to $887,905,919, at an annual rate of 5.21 per cent. For the corresponding period of last year the net was $798,030,839, or at the rate of 4.79 per cent.

Operating revenues for September amounted to $588,689,673, an increase of 4.3 per cent as compared with last September. Operating expenses were $397,062,695, an increase of 2.5 per cent, and taxes amounted to $37,070,573, an increase of 11 per cent. Twelve Class I roads operated at a loss for the month, of which six were in the Eastern district, one in the Southern district and five in the Western district.

For the nine months period the operating revenues were $4,748,490,708, an increase of 4.7 per cent as compared with the corresponding period of last year, while operating expenses were $3,488,871,151, an increase of 2.7 per cent and taxes were $291,341,568, an increase of 10 per cent.

Eastern roads had a net for the nine months period of $455,477,066, at the annual rate of 5.7 per cent, as compared with $411,948,365, or 5.27 per cent, in the corresponding period of last year. Operating revenues of the eastern roads were $2,387,203,471, an increase of 5.1 per cent, while operating expenses were $1,756,604,776, an increase of 3.3 per cent.

For the month of September the eastern roads had a net of $67,438,057, compared with $58,877,529 in September last year.

Railroads in the Southern district for the nine months had a net of $120,576,249, which was at the annual rate of 5.82 per cent, as compared with $119,812,959 last year, which was at the annual rate of 6.06 per cent. Operating revenues for the nine months totaled $654,525,771, an increase of 5.8 per cent, while operating expenses totaled $483,802,069, an increase of 6.4 per cent. The net for September amounted to $15,093,192, while in the same month last year it was $17,262,467.

Complete reports except for the Kansas, Oklahoma & Gulf and the Duluth, Winnipeg & Pacific showed that the Class I railroads in the Western district for the nine months had a net of $311,852,604 at the annual rate of 4.46 per cent, as compared with $266,269,515 last year or 3.87 per cent. Operating revenues for the nine months amounted to $1,706,761,466, an increase of 3.8 per cent, while operating expenses totaled $1,248,464,306, an increase of seven-tenths of one per cent. For September, the net was $62,603,287, as compared with $58,111,058 last September.

The summary for the Class I railroads of the United States follows:

	1926	1925
Total operating revenue	$588,689,673	$564,385,841
Total operating expenses	397,062,695	387,318,859
Taxes	37,070,573	33,372,889
Net railway operating income	145,134,536	134,251,054
Operating ratio	67.45	68.63
Rate of return on property inve tment	5.74%	5.42%
NINE MONTHS ENDED OCTOBER 31		
Total operating revenues	$4,748,490,708	$4,534,921,685
Total operating expenses	3,488,871,151	3,396,105,680
Taxes	291,341,568	265,178,071
Net railway operating income	887,905,919	798,030,839
Operating ratio	73.47	74.89
Rate of return on property investment	5.21%	4.79%

Electrical Manufacturers' Exhibits at A. R. E. E. Convention

The following is a list of exhibitors of the Railway Electrical Manufacturers' Association held in the Hotel Sherman, Chicago, Ill. October 26, 27, 28 and 29 during the seventeenth annual convention of the Association of Railway Electrical Engineers:

Adams & Westlake Company, Chicago, Ill.; electric fixtures for passenger cars, paddle fans, cast aluminum electric signal lamps, crossing signals; A. S. Anderson, W. J. Pierson, H. G. Turney, W. G. Porter, E. Andrews, R. D. John, J. M. Willits, F. W. Foehringer, J. N. Black.

Ahlberg Bearing Company, Chicago, Ill.; CJB master ball bearings, Ahlberg ground bearings; W. O. Bender, F. O. Burkholder, B. B. Clark, H. E. Dunning.

Albert & J. M. Anderson Manufacturing Company, Boston, Mass.; charging plugs and receptacles, automatic time switches, knife switches bus bar benders, small plugs and receptacles for locomotive wiring; B. G. Durham.

Allen-Bradley Company, Milwaukee, Wis.; automatic a.c. resistance starter, across-the-line starting switches, semi-automatic hand starter, time limit automatic d.c. starter, battery charging rheostat, turntable controller; F. L. Gohl, H. L. O'Donnell, G. O. Wilms.

Appleton Electric Company, Chicago, Ill.; unilets, steel conduit fittings, reelites, the latter being automatic take-up reels for electrical conductors; E. A. Hakanson, J. T. McHenry, A. F. Hakanson, A. S. Merrill, E. G. K. Anderson.

The Baker-Raulang Company, Cleveland, Ohio; locomotive type crane truck, three-wheel tractor, elevating platform truck, Hy-lift truck; M. A. Watterson, F. N. Phelps, W. F. Hebard, T. W. Barnes, H. B. Greig, W. I. Lott, V. A. Shouldis.

Benjamin Electric Mfg. Co., Chicago, Ill.; lighting equipment for railways, demonstrations of equipment, pictures of lighting installations; J. T. B. Addington, R. C. Mons, A. H. Wiese.

The J. G. Brill Company; Philadelphia, Pa.; large pictures of gas-electric and gas propelled railway motor cars; J. C. Bryan, A. F. McCormack, J. H. Klein.

The Bryant Electric Company, Bridgeport, Conn.; electrical wiring devices; J. W. Thomas, W. O. Dahlstrom, W. H. Rush, C. E. Roberts, C. W. Foster, W. A. Stacey.

The Buda Company, Chicago, Ill.; Buda-Ross turbo-generator sets. Model GW, Design "C" and Model 900 T. C. especially designed for locomotive headlighting and train control service; M. A. Ross, T. H. Williams, H. P. Bayley.

Bussman Mfg. Co., St. Louis, Mo.; complete line of Buss fuses including all types of renewable, non-renewable, plug and cartridge fuses, open fuses, auto fuses, fuse wire, etc.; M. J. Wolf, J. C. Ingram, D. E. Spear, Jr., G. T. Perlick.

Central States General Electric Supply Company, Chicago, Ill.; Attalite luminaires, Maxolite reflectors, Ralco line of receptacles, plugs and locomotive devices, Maxocord, Mastercord, railway type fans, locomotive wire. Gibbs connectors, locomotive cab cords; V. R. marker plug and other devices designed for steam railroads, general wiring devices; R. C. Close, W. H. East, G. Jerome, J. M. Lorenz, A. G. Smith.

Chicago Fuse Mfg. Co., Chicago, Ill.; Union renewable fuses, Union and Gem non-renewable fuses, Gem plug and radio fuses, Union outlet boxes and Gem sectional switch boxes; A. E. Tregenza, E. J. Hamilton, L. C. Noyes, H. P. Collins.

Crouse-Hinds Company, Syracuse, N. Y.; Condulets, railroad electrical fittings, floodlights, safety switches, panelboards; R. Olley, F. C. Smith, H. J. MacIntyre, A. B. McChesney, F. F. Skeel, Charles Dubsky, W. W. Booth, E. F. Granzow, N. E. Bigley, G. G. Griffin.

The Cutler-Hammer Mfg. Co., Milwaukee, Wis.; C-H red top lifting magnet, A. C. across-the-line automatic starters, battery charging equipment, new C-H electrical space heater; C. J. Maloney, K. O. Swanson, A. H. James.

Economy Fuse & Mfg. Co., Chicago, Ill.; Economy renewable cartridge enclosed fuses, Eco non-renewable non-indicating enclosed cartridge fuses, Arkless indicating non-renewable enclosed cartridge fuses, Economy renewable plug fuses, Clearsite non-renewable plug fuses; R. S. Smith.

Edison Storage Battery Company, Orange, N. J.; Edison batteries for car lighting service, Edison batteries used in industrial truck and tractor service; D. C. Wilson, W. F. Bauer, L. C. Hensel, A. M. Andersen, U. V. McMillian, D. B. Mugan, J. L. Hays, O. A. Neidermeyer.

Electric Service Supplies Company, Philadelphia, Pa.; Golden Glow headlights, Keystone turbo generators, switches, Golden Glow floodlights; C. J. Mayer, H. G. Graham, H. D. Rohman, E. B. Hallman, J. W. Porter, T. M. Childs, B. D. Barger, J. F. Carper.

The Electric Storage Battery Company, Philadelphia, Pa.; standard E. S. B. car lighting equipment including distributing panel, control panel and type D-3 generator, two cell EP-13 car lighting battery cut away at corner to show Manchester Positive and Box Negative plates, two cell type MVAH-17 battery with pasted plates also cut away to show construction, single unsealed cell of same type but with iron clad positive plates, Exide car lighting battery in KXK-11 cell, Exide bus lighting battery type KXK, signal batteries, paintings depicting railroad activity; T. L. Mount, H. S. C. Folk, H. W. Beedle, R. I. Baird, F. P. Dereby, R. O. Miles, W. H. Payne, E. H. Watkins.

Fairbanks, Morse & Company, Chicago, Ill.; motors and motor parts arranged to show construction and quality of a.c. and d.c. motors; P. H. Gilleland, F. M. Condit, H. E. Vogel, H. L. Hilleary, E. C. Golladay, C. H. Wilson, D. K. Lee, F. J. Lee, B. S. Spaulding, G. Howard, W. L. Nies, G. W. Lewis, C. T. Fugitt, C. B. O'Neil.

Frank Adam Electric Company, St. Louis, Mo.; panelboards for the distribution of lighting circuits, flood lighting equipment manufactured by the Major Equipment Company who are representatives of the Frank Adam Electric Company; P. J. Rabon, B. F. Fuller.

General Electric Company, Schenectady, N. Y.; floodlights, motors, control, arc welding, industrial heating devices, soldering irons, Quartz tubes; R. F. Goggin, W. J. Hedley, B. S. Pero, F. P. Jones, F. I. Kittredge, J. J. Liles, Lynn Covey, R. L. Hughes, R. H. Parker, C. Dorticos, W. G. Ferguson, W. N. B. Brady, C. T. McLoughlin, John Roberts, C. C. Bailey.

Gould Car Lighting Corp., New York, N. Y.; car lighting generators, regulators, turbo generator for locomotive headlights, light-weight car lighting batteries with glass wool separators, Plante car lighting batteries; C. R. Naylor, G. R. Berger, R. T. Knapp, P. H. Simpson, W. F. Bouche, E. J. Blake, M. R. Shedd.

Graybar Electric Company, Chicago, Ill.; Sheraduct conduit, Square D safety switches, Habirshaw wires and cables, Crouse-Hinds condulets, fittings and floodlights, Tirex cables, Graybar No. 99 lighting units, Graybar sunbeam Mazda lamps, National carbon batteries, Hubbard pole line hardware, Benjamin shop lighting fixtures, Speedway drills; G. H. Porter, E. J. O'Donnell, T. J. Rider, R. C. Kinney, Wm. Weiss, J. E. Barron, H. C. Gump, J. J. O'Connor, H. C. Olmstead, E. M. Nelson, J. H. Gleason, A. G. Nabors.

Harvey-Hubbel, Inc., Bridgeport, Conn.; switches, plugs, receptacles, lamp guards, reflectors, socket material; J. K. Utz, J. F. Ware, R. L. Renaud, E. P. Napier, A. W. Schwind, E. P. Doherty, L. G. Mockenhaupt.

Hazard Mfg. Co., Wilkes-Barre, Pa.; railroad signal wires and cables, including spiral weave aerial cables and steel tape armored underground cables, train control wires and cables, locomotive headlight wire, submarine cables; T. A. Keefe, J. E. Ham, D. J. Morgan.

Henrite Products Company, Jersey City, N. J.; motor and generator brushes; Wm. H. Gluck, R. L. Henry.

C. H. Hollup Corp., Chicago, Ill.; processed bare and flux coated electrodes for electric welding, welding rods for oxy acetylene welding, helmets, hand shields, welding lenses, holders, welding and cutting torches, regulators, sand blast equipment; H. R. Pennington, K. R. Hare.

Howell Electric Motors Company, Howell, Mich.; Red Band motors featuring roller bearings; C. F. Norton, O. A. Reed, J. M. Johnson, D. S. Wilkus.

Industrial Controller Company, Milwaukee, Wis.; manually operated a.c. compensator, a.c. motor circuit switch, a.c. automatic compensator, three types of a.c. automatic starters, across-the-line, a.c. automatic reversing starter, a.c. automatic starter, primary resistor type, three types of d.c. automatic starters, float switch; John McC. Price, R. F. Harrison, Earle J. Rooker, Ned Weller.

The Kerite Insulated Wire & Cable Company, Inc., New York, N. Y.; insulated wires and cables; W. H. Fenley, E. L. Adams, C. A. Reeb, C. E. Hieber, C. M. Deardorff, E. M. Branchfield, M. D. Cook, J. A. Hamilton.

Loeffelholz Company, Milwaukee, Wis.; Gibb's train lighting receptacles, plugs and accessories, upper and lower berth lamps, car lighting fixtures and car lighting electrical appliances; L. R. Taylor, P. A. Bernhardt, G. B. Miller.

E. A. Lundy Company, Pittsburgh, Pa.; line materials, reinforced switch clips, ampere-hour meters, Haworth Wej-Rite clamps, Kuhlman transformers, Balkite rectifiers; E. A. Lundy, C. G. McCaulley, Preston Paris, F. H. Schaeffer, J. S. Miller.

The Martindale Electric Company, Cleveland, Ohio; motor maintenance equipment, Universal ammeters, voltmeters, armature and field testers, commutator cement, commutator grinding tools, commutator slot insulating varnish, commutator slotting files, commutator slotting machines, commutator slotting saws, commutator stones, electrical etchers, megohm insulation meters, portable blowers, soldering transformer sets; E. H. Martindale, C. E. Lacey, Louis D. Moore.

Mercury Mfg. Co., Chicago, Ill.; type L worm drive electric tractors, type H internal gear drive electric tractors, industrial trailer equipment, automatic trailer coupler; J. R. Bensely, H. B. Clapp, L. R. Millar, W. D. Schlundt, A. D. Shanks, C. W. Henkle, L. J. Kline.

Mutual Electric & Machine Company, Detroit, Mich.; Bull Dog safety switches, lighting panels; E. A. Printz, J. E. Schwarz, F. M. McAdams.

National Lamp Works, Nela Park, Cleveland, Ohio; incandescent lamps; H. H. Helmbright, W. M. Langstaff.

National Train Control Company, Chicago, Ill.; working demonstration of National automatic train control with permissive feature; E. C. Wilson, J. C. Anderson, E. W. Stone, C. E. Sampson.

The Okonite Company, Passaic, N. J.; Okonite rubber covered and varnished cambric insulated wires and cables for all services and voltages, Okocords for portable lights and train control service, friction and rubber tapes, Okonite-Callender paper insulated, supertension and impregnated paper cables, splicing materials, joint boxes, etc.; D. Underhill, A. L. McNeill, R. N. Baker, F. J. White, E. H. McNeill, J. J. O'Brien, L. R. Mann.

Otis B. Duncan, Chicago, Ill.; battery charging motor generator sets, switchboards, commutator stones, commutator slotters, turning tool, commutator cement; Otis B. Duncan, L. C. Howard, H. P. F. Dering, George Jacobson.

The Pyle-National Company, Chicago, Ill.; turbo generators; headlight cases, marker lamps, classification lamps, cab light fixtures, headlight switches, locomotive wiring fittings, shop wiring fittings, safety-first switches, train connectors; safety portable hand lamps, etc.; J. W. Johnson, Wm. Miller, J. A. Amos, J. J. Kennedy, Crawford McGinnis, T. P. McGinnis, G. E. Hass, P. S. Westcott, E. H. Hagensick, G. V. Wright, W. A. Ross, W. M. Graves, Jr.

Railway Electrical Engineer, New York, N. Y.; books and magazines; F. J. Fischer, R. F. Duysters, H. A. Morrison, R. S. Kenrick, C. J. Corse, A. G. Oehler.

Railway Purchases & Stores, Chicago, Ill.; H. B. Kirkland, J. P. Murphy, Jr., K. F. Sheeran, Edward Wray.

Railway Utility Company, Chicago, Ill.; electric heaters, electric heat regulators, passenger car ventilators; E. J. Magerstadt, Wm. J. Pine, R. R. Helden, Wm. G. Hartwig, Albert Hirsch.

Reller-Smith Company, New York, N. Y.; Alternating and direct current

switchboard instruments in various sizes and styles, direct current portable ammeters, voltmeters and volt-ammeters in small and large styles, alternating current portable ammeters, voltmeters, volt-ammeters, wattmeters, power factor meters and frequency meters, portable volt-ammeters and ohmmeters for signal system and automatic train control testing, miscellaneous devices such as galvanometers, transformers, radio instruments, shunts, multipliers, circuit breakers in different types, capacities and combinations; G. L. Crosby, M. Frankel, M. B. Mathley.

The Safety Car Heating & Lighting Company, New Haven, Conn.; electric car lighting fixtures, fans, Putnam type CLEG storage batteries, car lighting equipment including generators, generator regulators and lamp regulators for all type cars; J. H. Henry, H. K. Williams, C. W. T. Stuart, A. V. Livingston, J. H. Rodger, C. A. Pinyard, G. D. Ladd, A. R. Hamilton, G. H. Scott, S. I. Hopkins, C. A. Chasey.

Simplex Wire & Cable Company, Boston, Mass.; wires and cables; L. S. Jones, W. F. Hruby, A. Hagen, C. J. Zeigler.

SKF Industries, Inc., New York, N. Y.; ball bearing equipped truck showing the anti-friction qualities of ball and roller bearings; W. L. Batt, H. E. Brunner, R. H. DeMott, W. F. Temple, F. E. Ericson, C. L. Drake, R. C. Byler.

Square D Company, Detroit, Mich.; industrial safety switches, convertible power panels, new 32-volt tester developed for the railroad field and designed for making tests on the turbo-generator of steam locomotives; Russell Murphy, C. W. Bates, A. A. Schueler, R. J. Parisian.

Strom Ball Bearing Mfg. Co., Chicago, Ill.; Strom single-row and double-row radial, angular contact, thrust bearings, ball bearings for electric headlight generators and car lighting generators; G. A. Strom, H. N. Parsons, C. T. Olson, H. R. Higgins, Miss Cora C. Smith.

Sunbeam Electric Mfg. Co., Evansville, Ind.; headlight turbo-generators, train control turbo-generators, glass reflector headlights, metal reflector headlights, headlight accessories; M. C. Petersen, C. E. Kinnaw, C. W. Marshall, W. T. Manogue, J. Henry Schroeder.

The Trumbull Electric Mfg. Co., Plainville, Conn.

United States Graphite Company, Saginaw, Mich.; motor and generator brushes, carbon products, Mexican Graphite products; W. R. Pflasterer, N. B. McRee.

U. S. Light & Heat Corp., Niagara Falls, N. Y.; car lighting battery, car lighting battery parts, special bus battery; USL electric arc welder, samples of electric welding; E. Bauer, W. L. Bliss, J. L. Fosnight, R. J. Stanton, A. W. Donop, E. K. Gordon, J. F. Romadka.

United States Rubber Company, New York, N. Y.; axle dynamo belt, wire for all railroad uses, hard rubber train lighting jars, hard rubber separators, rubber splicing and friction tape, electrician's acid gloves; L. S. Hungerford, Jr., G. A. Gardner, W. T. Keenan, R. O. Hungerford, J. A. Leuver, G. M. Haynes, W. F. McDonnell, H. F. Johnson.

Weber Brothers Metal Works, Chicago, Ill.; improved Rochlitz automatic water still in various types; G. A. Stephen, W. H. Weber, W. M. Lalor.

Westburg Engineering Company, Chicago, Ill., Western selling agents for Weston Electric Instrument Corp., Newark, N. J.; portable electrical indicating instruments for general railroad testing tachometers including instruments suitable for locomotive speed indicators and railway private car speed indicators; P. A. Westburg, Leon C. Herrmann, Alvin Thielke, Kline Gray, J. F. Inman.

Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.; flood lighting units with chromium plated reflectors, insulators, starters, insulating material, instruments, safety switches, lighting, etc.

Willard Storage Battery Company, Cleveland, Ohio; Plante train lighting batteries, paste plate light weight train lighting batteries, paste plate house lighting and signal type time clock glass jar batteries, bus batteries; Louis Sears, C. T. Klug, C. E. Murray, M. J. Brennan.

Daniel Woodhead Company, Chicago, Ill.; Diehl fans, Candee rubber tape, Ackerman friction tape, Wheeler reflectors, Adapti fittings, Protex lamp guards; Daniel Woodhead, E. J. Biederman, R. B. McFeeley, H. H. Keer, Jr.

Meetings and Conventions

The following list gives names of secretaries, dates of next or regular meetings and places of meetings.

AIR BRAKE ASSOCIATION.—Next meeting, May 24, 1927, Mayflower Hotel, Washington, D. C. Exhibit by Air Brake Appliance Association.

AIR BRAKE APPLIANCE ASSOCIATION.—J. H. Ainsworth, A. M. Byers Co., 410 Union Bank Bldg., Pittsburgh, Pa. Meets with Air Brake Association.

AMERICAN ASSOCIATION OF FREIGHT TRAFFIC OFFICERS.—J. D. Gowin, 112 W. Adams St., Chicago.

AMERICAN ASSOCIATION OF GENERAL BAGGAGE AGENTS.—E. L. Duncan, 332 S. Michigan Ave., Chicago. Next meeting, June 21-23, 1927, Mackinac Island, Mich.

AMERICAN ASSOCIATION OF PASSENGER TRAFFIC OFFICERS.—W. C. Hope, C. R. R. of N. J., 143 Liberty St., New York.

AMERICAN ASSOCIATION OF RAILROAD SUPERINTENDENTS.—J. Rothschild, Room 400, Union Station, St. Louis, Mo. Annual convention, June 21-24, 1927, San Francisco.

AMERICAN ASSOCIATION OF SUPERINTENDENTS OF DINING CARS.—T. E. Welsh, Chicago, North Shore & Milwaukee, Highwood, Ill.

AMERICAN ELECTRIC RAILWAY ASSOCIATION.—J. W. Welsh, 292 Madison Ave., New York.

AMERICAN RAILROAD MASTER TINNERS' COPPERSMITHS' AND PIPE FITTERS' ASSOCIATION.—C. Borcherdt, 202 North Hamlin Ave., Chicago, Ill.

AMERICAN RAILWAY ASSOCIATION.—H. J. Forster, 30 Vesey St., New York, N. Y. Annual meeting, November 17, Biltmore Hotel, N. Y.

Division I.—Operating—J. C. Caviston, 30 Vesey St., New York.

Freight Station Section (including former activities of American Association of Freight Agents).—R. O. Wells, Freight Agent, Illinois Central Railroad, Chicago, Ill. Annual convention, May 10-14, 1927, Memphis, Tenn.

Medical and Surgical Section.—J. C. Caviston, 30 Vesey St., N. Y.

Protective Section (including former activities of the American Railway Chief Special Agents and Chiefs of Police Association.)—J. C. Caviston, 30 Vesey St., New York, N. Y.

Safety Section.—J. C. Cavison, 30 Vesey St., New York. Next meeting, April 19-21, Chicago.

Telegraph and Telephone Section (including former activities of the Association of Railroad Telegraph Superintendents).—W. A. Fairbanks, 30 Vesey St., New York. Annual meeting, Oct. 4-6, 1927, Washington, D. C.

Division II.—Transportation (including former activities of the Association of Transportation and Car Accounting Officers).—E. W. Covert, 431 South Dearborn St., Chicago.

Division III.—Traffic, J. Gottschalk, 143 Liberty St., New York.

Division IV.—Engineering, E. H. Fritch, 431 South Dearborn St., Chicago, Ill. Annual convention, March 8-10, 1927, Chicago. Exhibit by National Railway Appliances Association, March 7-10.

Construction and Maintenance Section.—E. H. Fritch. Next meeting, March 8-10, 1927, Chicago.

Electrical Section.—E. H. Fritch.

Signal Section (including former activities of the Railway Signal Association).—H. S. Balliet, 30 Vesey St., New York. Annual meeting, March 7-8, 1927, Chicago.

Division V.—Mechanical (including former activities of the Master Car Builders' Association and the American Railway Master Mechanics' Association).—V. R. Hawthorne, 431 South Dearborn St., Chicago, Ill. Exhibit by Railway Supply Manufacturers' Association.

Equipment Painting Section (including former activities of the Master Car and Locomotive Painters' Association).—V. R. Hawthorne, 431 South Dearborn St., Chicago. Annual convention, 1927, Louisville, Ky.

Division VI.—Purchases and Stores (including former activities of the Railway Storekeepers' Association).—W. J. Farrell, 30 Vesey St., New York, N. Y. Exhibit by Railway Supply Manufacturers' Association.

Division VII.—Freight Claims (including former activities of the Freight Claim Association).—Lewis Pilcher, 431 South Dearborn St., Chicago, Ill.

Car Service Division.—C. A. Buch, 17th and H Sts., N. W., Washington, D. C.

AMERICAN RAILWAY BRIDGE AND BUILDING ASSOCIATION.—C. A. Lichty. C. & N. W. Ry., 319 N. Waller Ave., Chicago. Exhibit by Bridge and Building Supply Men's Association. Annual convention, 1927, Minneapolis.

AMERICAN RAILWAY DEVELOPMENT ASSOCIATION.—H. W. Byerly, General Immigration Agent, Northern Pacific, St. Paul, Minn. Semi-annual meeting, December 2-3, 1926, Chicago.

AMERICAN RAILWAY ENGINEERING ASSOCIATION.—(Works in co-operation with the American Railway Association Division IV.) E. H. Fritch, 431 South Dearborn St., Chicago. Next annual convention, March 8-10, 1927, Chicago. Exhibit by National Railway Appliances Association, March 7-10.

AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—G. G. Macina, C. M. & St. P. Ry., 11402 Calumet Ave., Chicago Exhibit by Supply Association of the American Railway Tool Foremen's Association.

AMERICAN SHORT LINE RAILROAD ASSOCIATION.—T. F. Whittelsey, 1319 21 F St., N. W., Washington, D. C.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS.—Calvin W. Rice, 29 W. 39th St., New York. Railroad Division, Marion B. Richardson, Associate Mechanical Editor, *Railway Age*, 30 Church St., New York. Annual meeting, Dec. 6-9, 29 W. 39th St., New York.

AMERICAN WOOD PRESERVERS' ASSOCIATION.—E. J. Stocking, 111 West Washington St., Chicago. Annual meeting, January 25-27, 1927, Nashville, Tenn.

ASSOCIATION OF RAILWAY CLAIM AGENTS.—H. D. Morris, District Claim Agent, Northern Pacific Ry., St. Paul, Minn. Annual convention, 1927, New Orleans, La.

ASSOCIATION OF RAILWAY ELECTRICAL ENGINEERS.—Jos. A. Andreucetti, C. & N. W., Room 413, C. & N. W. Station, Chicago. Exhibit by Railway Electrical Supply Manufacturere' Association.

ASSOCIATION OF RAILWAY EXECUTIVES.—Stanley J. Strong, 17th and H Sts., N. W., Washington, D. C. Next meeting, Nov. 18, New York.

ASSOCIATION OF RAILWAY SUPPLY MEN.—C. O. Jenista, Barco Mfg. Co., 1801 Winnemac Ave., Chicago. Meeting with International Railway General Foremen's Association.

BRIDGE AND BUILDING SUPPLY MEN'S ASSOCIATION.—D. A. Hultgren, Massey Concrete Products Corp., Chicago. Meets with American Railway Bridge and Building Association.

CANADIAN RAILWAY CLUB.—C. R. Crook, 129 Charron St., Montreal, Que.

CAR FOREMEN'S ASSOCIATION OF CHICAGO.—Aaron Kline, 626 North Pine Ave., Chicago. Regular meetings, 2nd Monday in month, except June, July and August, Great Northern Hotel, Chicago.

CAR FOREMEN'S ASSOCIATION OF LOS ANGELES.—J. W. Krause, 514 East Eighth St., Los Angeles, Calif. Regular meetings, second Friday of each month, 514 East Eighth St., Los Angeles.

CAR FOREMEN'S ASSOCIATION OF ST. LOUIS, MO.—F. G. Wiegman, 721 North 23rd St., East St. Louis, Ill. Meetings, first Tuesday in month at the American Hotel Annex, St. Louis.

CENTRAL RAILWAY CLUB.—Harry D. Vought, 26 Cortlandt St., New York. Regular meetings. 2nd Thursday each month, except June, July, August, Hotel Statler, Buffalo, N. Y.

CINCINNATI RAILWAY CLUB.—D. R. Boyd, 811 Union Central Bldg., Cincinnati, Ohio. Meetings, 2nd Tuesday in February, May, September and November.

CLEVELAND STEAM RAILWAY CLUB.—F. L. Frericks, 14416 Alder Ave., Cleveland, Ohio. Meetings, first Monday each month, except July, August, September, Hotel Hollenden, Cleveland.

INTERNATIONAL RAILROAD MASTER BLACKSMITHS' ASSOCIATION.—W. J. Mayer, Michigan Central R. R., Detroit, Mich. Next convention, 1927, Buffalo, N. Y. Exhibit by International Railroad Master Blacksmiths' Supply Men's Association.

INTERNATIONAL RAILROAD MASTER BLACKSMITHS' SUPPLY MEN'S ASSOCIATION.—W. R. WALSH, Ewald Iron Co., Louisville, Ky.

INTERNATIONAL RAILWAY CONGRESS.—Office of Permanent Commission of the Association, 74 rue du Progres, Brussels, Belgium. General secretary. P. Ghilain. Next session of the Congress, Spain, 1930.

INTERNATIONAL RAILWAY FUEL ASSOCIATION.—L. G. Plant, 80 E. Jackson Blvd., Chicago. Annual convention May 10-13, 1927, Hotel Sherman, Chicago. Exhibit by International Railway Supply Men's Association.

INTERNATIONAL RAILWAY GENERAL FOREMEN'S ASSOCIATION.—Wm. Hall, 1061 W. Wabash Ave., Winoma, Minn.

INTERNATIONAL RAILWAY SUPPLY MEN'S ASSOCIATION.—W. H. Harris, 343 S. Dearborn St., Chicago. Earl E. Thulin, assistant secretary, 715 Peoples Gas Bldg., Chicago. Meets with International Railway Fuel Association.

MASTER BOILER MAKERS' ASSOCIATION.—Harry D. Vought, 26 Cortlandt St., New York. Next annual convention May 3-6, 1927, Hotel Sherman, Chicago.

MOBILE TRAFFIC AND TRANSPORTATION CLUB.—T. C. Schley, 71 Conti St., Mobile, Ala. Regular dinner meetings 6 p. m., on 2nd and 4th Monday of each month, Cawthon Vineyard, Mobile, Ala.

NATIONAL ASSOCIATION OF RAILROAD TIE PRODUCERS.—E. A. Morse, vice-president. Potosi Tie & Lumber Co., St. Louis, Mo. Next convention, January 27 and 28, 1927, Nashville, Tenn.

NATIONAL ASSOCIATION OF RAILROAD AND UTILITIES COMMISSIONERS.—James B. Walker, 49 Lafayette St., New York. Annual convention, Nov. 9, Battery Park Hotel, Asheville, N. C.

NATIONAL RAILWAY APPLIANCES ASSOCIATION.—C. W. Kelly, 845 South Wabash Ave., Chicago. Annual exhibition, March 7-10, 1927, at convention of American Railway Engineering Association.

NATIONAL SAFETY COUNCIL.—Steam Railroad Section: J. E. Long, Superintendent Safety, D. & H., Albany, N. Y.

NEW ENGLAND RAILROAD CLUB.—W. E. Cade, Jr., 683 Atlantic Ave., Boston, Mass. Regular meetings, 2nd Tuesday in month, excepting June, July, August and September, Copley-Plaza Hotel, Boston, Mass.

NEW YORK RAILROAD CLUB.—Harry D. Vought, 26 Cortlandt St., New York. Regular meetings, 3rd Friday in month, except June, July and August.

PACIFIC RAILWAY CLUB.—W. S. Wollner, 64 Pine St., San Francisco, Cal. Regular meetings, 2d Thursday in month, alternately in San Francisco and Oakland.

RAILROAD MOTOR TRANSPORT CONFERENCE.—F. J. Scarr, Supervisor Motor Service, Penna. R. R., Philadelphia. Next meeting, December, Chicago.

RAILWAY ACCOUNTING OFFICERS ASSOCIATION.—E. R. Woodson, 1116 Woodward Building, Washington, D. C. Annual meeting, June, 1927, Denver, Colo.

RAILWAY BUSINESS ASSOCIATION.—Frank W. Noxon, 1406 Packard Bldg., Philadelphia, Pa. Annual meeting, November 18, 1926, Hotel Commodore, New York.

RAILWAY CAR DEPARTMENT OFFICERS' ASSOCIATION.—A. S. Sternberg, Belt Railway of Chicago, Polk and Dearborn Sts., Chicago. Supply-men's Association.—B. S. Johnson, W. H. Miner, Inc., Rookery Bldg., Chicago.

RAILWAY CAR MANUFACTURERS' ASSOCIATION.—W. C. Tabbert, 61 Broadway, New York.

RAILWAY CLUB OF PITTSBURGH.—J. D. Conway, 515 Grandview Ave., Pittsburgh, Pa. Regular meetings, 4th Thursday in each month, except June, July and August, Fort Pitt Hotel, Pittsburgh, Pa.

RAILWAY ELECTRICAL SUPPLY MANUFACTURERS' ASSOCIATION.—Edward Wray, 9 S. Clinton St., Chicago. Annual meeting with Association of Railway Electrical Engineers, October 27-30, Chicago.

RAILWAY EQUIPMENT MANUFACTURERS' ASSOCIATION.—F. W. Venton, Crane Co., 836 S. Michigan Ave., Chicago. Meeting with Traveling Engineers' Association.

RAILWAY FIRE PROTECTION ASSOCIATION.—R. R. Hackett, Baltimore & Ohio R. R., Baltimore, Md.

RAILWAY REAL ESTATE ASSOCIATION.—R. H. Morrison, C. & O. Ry., Richmond, Va.

RAILWAY SUPPLY MANUFACTURERS' ASSOCIATION.—J. D. Conway, 1841 Oliver Bldg., Pittsburgh, Pa. Meets with Mechanical Division and Purchases and Stores Division, A. R. A.

RAILWAY TELEGRAPH AND TELEPHONE APPLIANCE ASSOCIATION.—G. A. Nelson, 30 Church St., New York. Meets with Telegraph and Telephone Section of A. R. A., Division I.

RAILWAY TREASURY OFFICERS' ASSOCIATION.—F. L. Koentz, Elgin, Joliet & Eastern Ry., Chicago.

ROADMASTERS' AND MAINTENANCE OF WAY ASSOCIATION.—T. F. Donahoe, Gen. Supvr. Road, Baltimore & Ohio, Pittsburgh, Pa. Exhibit by Track Supply Association.

ST. LOUIS RAILWAY CLUB.—B. W. Frauenthal, Union Station, St. Louis, Mo. Regular meetings, 2nd Friday in month, except June, July and August.

SIGNAL APPLIANCE ASSOCIATION.—F. W. Edmunds, West Nyack (Rockland Co.), N. Y. Meets with A. R. A., Signal Section.

SOUTHEASTERN CARMEN'S INTERCHANGE ASSOCIATION.—Clyde Kimball, Inman Shops, Atlanta, Ga. Meets semi-annually.

SOUTHERN AND SOUTHWESTERN RAILWAY CLUB.—A. T. Miller, P. O. Box 1205, Atlanta, Ga. Regular meetings, 3rd Thursday in January, March, May, July, September and November, Ansley Hotel, Atlanta.

SOUTHERN ASSOCIATION OF CAR SERVICE OFFICERS.—R. G. Parks, A. B. & A. Ry., Atlanta, Ga.

SUPPLY ASSOCIATION OF AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—W. R. Mau, Vanadium-Alloys Steel Co., 1440 W. Lake St., Chicago.

TRACK SUPPLY ASSOCIATION.—W. C. Kidd, Ramapo-Ajax Corporation, Hillburn, N. Y. Meets with Roadmasters' and Maintenance of Way Association.

TRAVELING ENGINEERS' ASSOCIATION.—W. O. Thompson, Gen. Supt. R. S., New York Central, Buffalo, N. Y. Exhibit by Railway Equipment Manufacturers' Association.

WESTERN RAILWAY CLUB.—Bruce V. Crandall, 189 West Madison St., Chicago. Regular meetings, 3rd Monday each month, except June, July and August.

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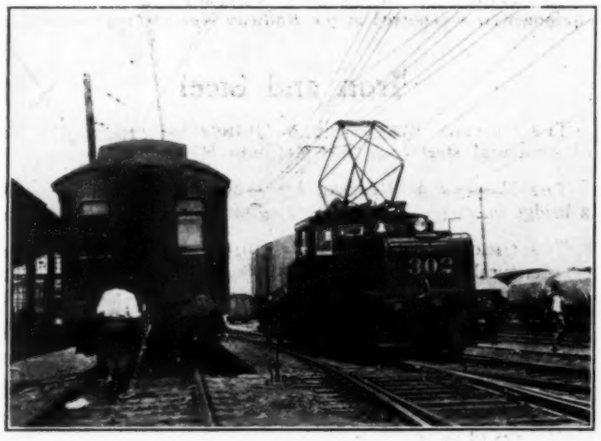


Electric Switcher in Campinas Yards, Paulista Railway, Brazil

Traffic News

The New England Shippers' Advisory Board held its fourth regular meeting at Providence, R. I., on October 28, Chairman William F. Garcelon presiding. There was an attendance of 483 shippers and railroad men. With few exceptions the commodity committees reported prospects of five to 50 per cent increase in business during the next three months as compared with the same period of last year. G. C. Randall reported on railroad conditions in New England and gave information about the grape traffic from California during the past season. Lieutenant Governor Smith of Rhode Island made a short address.

The Chicago Shippers' Conference Association held its annual meeting and luncheon on November 2 at the Hotel LaSalle, Chicago. Max Mason, president of the University of Chicago, described developments in science and explained their relation to business. Officers elected: President, H. D. Pixley, traffic manager of Carson, Pirie, Scott & Co.; vice-president, W. J. M. Lahl, traffic manager of the American Seating Company; secretary, A. J. Goetz, traffic manager of the Roberts & Schaefer Company; treasurer, H. G. Legan, traffic manager of the Morton Salt Company; and directors, Roy W. Campbell, manager of the Traffic Division of the Butler Paper Corporations and E. M. Antrim, general traffic manager of the Tribune Company.

Southeast Advisory Board

The Southeast Shippers' Advisory Board will hold its next meeting on December 10 at the Hotel Roosevelt, New Orleans, La. At this session the car requirements of every industry for the months of January, February and March, 1927, will be forecast. The commodity committee reports will also include a current survey of conditions within each industry, the stocks on hand and a prospective business outlook for the first quarter of the year. J. J. Pelley, president of the Central of Georgia, will be the principal speaker for the southeastern lines, while L. W. Baldwin, president of the Missouri Pacific, will represent the southwestern lines, and P. E. Odell, vice-president of the Gulf, Mobile & Northern, will speak for the short lines. The Car Service Committee, A.R.A., will meet at New Orleans the day preceding. Its chairman, J. E. Roberts, and J. W. Roberts, general superintendent of transportation of the Pennsylvania, will address the meeting of the board on December 10. W. C. Kendall, manager of the Car Service Division, A.R.A., will report on general transportation conditions throughout the country.

Joint Claim Conference at Memphis

A joint conference of the Central, Southeastern and Southwestern claim conferences was held at Memphis, Tenn., on October 20 and 21. The meeting gave consideration to methods for securing more uniformity in the practical application of the freight claim rules in the different territories of the United States and Canada. The subjects considered included interline relationship, uniformity in claim payments, the recognition of 50 per cent bunker capacity as determining liability, the beneficial exchange of information between heads of freight claim departments and freight claim prevention. At the banquet given on October 21, J. B. Hill, president of the Nashville, Chattanooga & St. Louis, spoke on "Facts and Fancies About Railroad Transportation." R. R. Ellis, president of the Hessig-Ellis Drug Company, spoke on "Co-operative Relations Between Shipper and Carrier," referring to the growth of railroads and the better understanding now existing between shippers and carriers. H. R. Grochau, chairman of the Freight Claim division of the American Railway Association, spoke on "Efforts of the Carriers to Promptly and Properly Adjust Freight Claims," reviewing the origin and growth of the Freight Claim division. F. E. Winburn, special representative of the Freight Claim division of the American Railway Association, spoke on "Efforts of the Carriers to Prevent Loss and Damage to Freight." He outlined the methods that are being used to reduce the number of claims and their causes.

Commission and Court News

Interstate Commerce Commission

Asks Data on Refrigerator Cars

The Interstate Commerce Commission, "having under consideration the question of the character of the construction of freight refrigerator cars," has issued an order to the railroads directing them to file on or before January 15, 1927, data regarding such cars in service on July 1, 1926, and hereafter to file, within 60 days of the first of each year, similar data as to the equipment in service as of the first of the year.

The information called for is as follows: Numbers and initials of refrigerator cars owned or leased and in service; the year in which each car was built and rebuilt; the material used for insulation in floors, roofs, sides and ends and the thickness of such insulation; the type of ice bunkers and the cubical capacity thereof; the character of bulkheads and whether insulated or not insulated; and whether refrigerators are provided with temporary or permanent floor racks, or no floor racks.

Personnel of Commissions

C. J. Golden, of Shamokin, has been appointed a member of the Public Service Commission of Pennsylvania, filling the only vacancy on that body. Mr. Golden is president of District No. 9, United Mine Workers of America.

Court News

Bill of Lading Binds Connecting Carriers; Texas Statute

The Texas Court of Civil Appeals holds that, when an intrastate shipment is made over connecting lines, the contract of shipment or bill of lading issued by the initial carrier is, under Tex. Comp. St. 1920, arts. 731, 732, binding on all the connecting carriers unless they make a new contract with the owner or shippers.—Gulf, C. & S. F. v. Mitchell (Tex. Civ. App.), 280 S. W. 335.

Order for Spur Track on Land Rented Out by Railroad Held Valid

The New Jersey Court of Errors and Appeals holds that a strip of land from 50 to 200 feet wide, owned by a railroad company and contiguous to its traveled right of way, is subject to the jurisdiction of the board of public utility commissioners to require a spur to be laid thereon, although temporarily rented out by the railroad for mercantile purposes. A requirement in the order that the petitioner for the spur as a condition bear any reasonable expense of any necessary rearrangement of the business facilities of the tenant of the strip located thereon was held valid under the circumstances of the case.—Robert W. Kennedy Co. v. Board (N. J.) 132 Atl. 118.

"Engaged in Interstate Commerce" Under Employers' Liability Act

The Indiana Appellate Court holds that an employee injured while icing a car assigned for hauling freight to another state was engaged in interstate commerce, although it was afterwards taken out of service and another substituted for it.—B. & O. v. Faust (Ind.) 150 N. E. 239.

The Illinois Supreme Court holds that the placing of a car billed from another state in a terminal company's yards until the consignee could receive it on the tracks at its plant was a temporary interruption in its transportation to destination, and did not take it out of interstate commerce.—Brown v. Illinois Terminal Co., 319 Ill. 326, 150 N. E. 242.

Equipment and Supplies

Locomotives

THE WESTERN MARYLAND contemplates buying 20 Decapod type locomotives.

THE NORFOLK SOUTHERN is inquiring for three Consolidation type locomotives.

THE NEW YORK CENTRAL is inquiring for 70 locomotive tenders of 15,000-gal. capacity.

THE TERMINAL RAILROAD ASSOCIATION OF ST. LOUIS is inquiring for four locomotive boilers.

THE ALTON & SOUTHERN has ordered one Mikado type locomotive from the American Locomotive Company. This locomotive will have 25-in. by 30-in. cylinders and a total weight in working order of 275,000 lb.

Freight Cars

THE ARGENTINE STATE RAILWAYS are inquiring through the car builders for 50 caboose cars.

THE PHILLIPS PETROLEUM COMPANY is inquiring for 700 class 3 tank cars of 10,000-gal. capacity.

THE CONLEY TANK CAR COMPANY is inquiring for 100 tank cars of 8,000-gal. capacity and 100 of 10,000-gal. capacity.

THE DATIA STATE RAILWAYS OF INDIA are inquiring through the car builders for from 6 to 12 box cars and from 6 to 12 gondola cars all of 20 tons' capacity.

THE CHICAGO & NORTH WESTERN has ordered 100 flat cars from the Bettendorf Company. Inquiry for this equipment was reported in the *Railway Age* of October 16.

THE UNITED STATES CAST IRON PIPE & FOUNDRY COMPANY has ordered six steel gondola cars of 70 tons' capacity from the American Car & Foundry Company. Inquiry for this equipment was reported in the *Railway Age* of June 5.

Passenger Cars

THE NEW YORK, CHICAGO & ST. LOUIS has ordered two dining cars from the Pullman Car & Manufacturing Corporation.

THE LONG ISLAND has ordered 60 passenger motor cars and 30 trailer cars for electric service; 20 passenger cars for steam service and four combination passenger and baggage cars from the American Car & Foundry Company. Inquiry for this equipment was reported in the *Railway Age* of October 9.

Iron and Steel

THE CHICAGO, BURLINGTON & QUINCY has ordered 175 tons of structural steel from the McClintic-Marshall Company.

THE NORFOLK & WESTERN has ordered 200 tons of steel for a bridge in Virginia, from the Virginia Bridge & Iron Company.

THE CHICAGO, BURLINGTON & QUINCY has ordered 200 tons of structural steel for bridge work from the McClintic-Marshall Company.

THE CHESAPEAKE & OHIO has divided an order for 45,000 tons of rails among the Illinois Steel Company, the Inland Steel Company and the Bethlehem Steel Company.

THE WABASH is inquiring for 5,600 kegs of track spikes and 1,600 kegs of bolts. This company has ordered 153 tons of structural steel for use near Adrian, Mich., from the American Bridge Company.

THE MISSOURI PACIFIC has divided an order for 50,000 tons of rails among the Colorado Fuel & Iron Company, the Tennessee Coal, Iron & Railroad Company, the Illinois Steel Company and the Inland Steel Company.

Machinery and Tools

THE RUTLAND has ordered a 36-in. by 16-ft. time saver lathe from the Niles-Bement-Pond Company.

THE CONNECTICUT COMPANY has ordered a 42-in. car wheel borer from the Niles-Bement-Pond Company.

THE GREAT NORTHERN has ordered one 25-ton locomotive crane from the American Hoist & Derrick Company.

THE CANADIAN NATIONAL has ordered a 36-in. by 44-in. side head mill from the Niles-Bement-Pond Company.

THE ILLINOIS CENTRAL has ordered a 1,500-lb. single frame steam hammer from the Niles-Bement-Pond Company.

THE LEHIGH & HUDSON RIVER has ordered a 42-in. by 18-ft. heavy lathe and a 5-ft. plain right line radial from the Niles-Bement-Pond Company.

THE DELAWARE, LACKAWANNA & WESTERN has ordered one 25-ton gantry crane from the Milwaukee Electric Crane & Manufacturing Company.

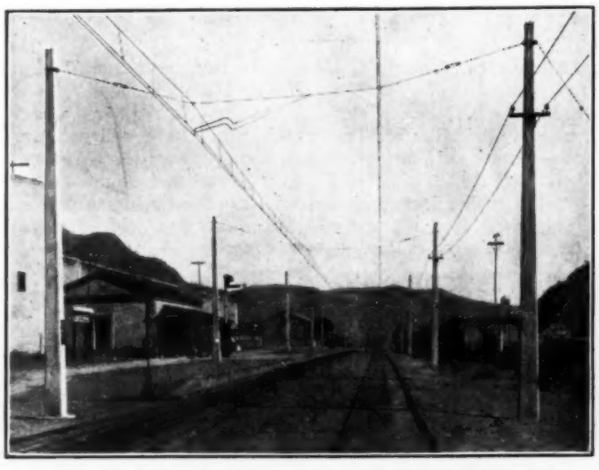
THE ATCHISON, TOPEKA & SANTA FE has ordered one 175-ton double-trolley electric crane for use at Cleburne, Texas, from the Harnischfeger Corporation.

Signaling

THE MONTREAL TRAMWAYS COMPANY has ordered from the General Railway Signal Company a Saxby & Farmer interlocking, five working levers, for the crossing with the Canadian National on George-the-Fifth street, Montreal.

THE SEABOARD AIR LINE has contracted with the Union Switch & Signal Company for the installation of a mechanical interlocking at the crossing of the Southern at Hampton, Fla., 32 levers. Color light signals are used on the S. A. L. tracks. The road has also contracted with the Union Company for material to be installed by the railroad forces for an interlocking with the Southern at Crawford, Fla., 16 levers.

THE NORFOLK-PORTSMOUTH TRAFFIC CLUB held its annual meeting and dinner at the Fairfax Hotel, Norfolk, Va., on October 21. The meeting was addressed by W. C. Kendall, manager of the car service division, A. R. A. H. P. Friedman was chosen president of the club for the ensuing year and R. T. Etheredge (S.A.L.) secretary.



Concrete Poles Supporting Catenary on Electrified Section of Mexican Railway

Supply Trade News

G. G. Jones, manager of the Chicago office of the **American Locomotive Company,** has been appointed sales engineer.

John Parker has been appointed New England representative of the **Rollway Bearing Company, Inc.,** Syracuse, N. Y.

The Lincoln Steel Company, Chicago, has moved its offices from 2320 West Fifty-eighth street to 229 West Illinois street.

Henry Donovan has resigned as general manager of the manufacturing department of the **General American Car Company,** Chicago, and the position of general manager has been abolished.

J. E. M. Schultz, representative of the **Sullivan Machinery Company,** with headquarters at Nashville, Tenn., has been appointed manager of the office at Dallas, Texas, to succeed D. H. Huster, resigned.

The Chain Belt Company, Milwaukee, Wis., has purchased, by acquiring all of the stock, the **Stearns Conveyor Company,** Cleveland, Ohio, adding another plant to the group of four companies that are affiliated under the former name.

George B. Dunell, vice-president and general manager of the **American Fork & Hoe Company,** Cleveland, Ohio, has been elected president and general manager, succeeding **W. H. Cowdery,** who has been elected chairman of the board.

Norman C. Naylor, who has been appointed district sales manager of both the American Locomotive Company and the Railway Steel Spring Company, with headquarters in the McCormick building, Chicago, has been in the employ of the Railway Steel Spring Company continuously since 1902. He was born in Rochester, N. Y., June 3, 1881, and entered the employ of McKee-Fuller & Co. on September 8, 1895. In June, 1896, he left this company to attend school in Colorado. He entered the employ of the Steel Tired Wheel Company, July 5, 1898, going to the Railway Steel Spring Company in 1902, when the Steel Tired Wheel Company was merged with the latter company. In December, 1916, he was appointed sales agent in the Chicago district, a position he held until his promotion to district sales manager.

N. C. Naylor

E. F. O'Connor, air brake foreman on the Southern, with headquarters at Birmingham, Ala., has resigned to become a representative on the southeastern territory for the **Edna Brass Manufacturing Company,** with headquarters at Richmond, Va.

Evan J. Parker, formerly of the Morgan Engineering Works, Alliance, Ohio, has joined the force of the **Northern Engineering Works,** Detroit, Mich., makers of material handling equipment. Mr. Parker will have charge of the sales promotion division.

The Botfield Refractories Company, Philadelphia, Pa., has appointed the following distributors: **The Westwater Supply Company,** Columbus, Ohio; the **Klinger-Dills Company,** Dayton, Ohio; the **Coan Equipment Company,** Fort

Wayne, Ind.; and the **Cleveland Tool & Supply Company**, Cleveland, Ohio.

Shirley S. French, vice-president and general manager of the General Fireproofing Company, Youngstown, Ohio, has been appointed president of the **Berger Manufacturing Company**, Canton, Ohio, a division of the **Central Alloy Steel Corporation**, Massillon, Ohio.

J. J. Gilmore has been appointed manager of sales of the Birmingham, Ala., district of the **American Steel & Wire Company**. The company has enlarged the scope of its Birmingham sales office to handle the company's entire line of products. Previously the office was limited to certain products, the remainder being handled from Chicago.

W. H. Winterrowd, assistant to the president of the **Lima Locomotive Works, Inc.**, has been elected a vice-president, with headquarters at New York. Mr. Winterrowd was born on April 2, 1884, at Hope, Ind. He attended the public schools at Shelbyville, Ind., and is a graduate of Purdue University, class of 1907. During his college vacations, Mr. Winterrowd was employed as a blacksmith's helper on the Lake Erie & Western, at Lima, Ohio, and as a car and air brake repairman on the Pennsylvania Lines West, at Dennison, Ohio. After graduation he obtained employment as a special apprentice on the Lake Shore & Michigan Southern, and in 1908 entered the service of the Lake Erie, Alliance & Wheeling as enginehouse foreman at Alliance, Ohio. In 1909 he became night enginehouse foreman of the Lake Shore & Michigan Southern at Youngstown, Ohio, and in 1910 was promoted to roundhouse foreman at Cleveland. A second promotion later in the same year made him assistant to the mechanical engineer. From September, 1912, to 1915, he was mechanical engineer of the Canadian Pacific, during the latter year being appointed assistant chief mechanical engineer, and in 1918 chief mechanical engineer, in which position he remained until 1923 when he was appointed assistant to the president of the Lima Locomotive Works. Mr. Winterrowd was at one time a member of the General Committee of the American Railway Association and is a member of the American Society of Mechanical Engineers.

W. H. Winterrowd

Samuel H. Worrell, who has been appointed general manager of sales of the **Detroit Seamless Steel Tubes Company**, was born on February 2, 1893, at Dayton, Ohio. He graduated from Cornell University in 1915 with the degree of A. B. and entered business on October 1, 1915, with the Broune & Shayre Manufacturing Company, Providence, R. I. On January 15, 1919, he entered the employ of the Otis Steel Company, Cleveland, Ohio, and on March 15 of the following year was transferred to Detroit, Mich. He entered the employ of the Detroit Seamless Steel Tubes Company on June 1, 1923, as city salesman and on August 1, 1925, was appointed district sales manager for Michigan, which position he held until his recent promotion.

Obituary

Charles Elliott, general superintendent of the Mt. Vernon Car Manufacturing Company, Mt. Vernon, Ill., died on October 26.

Frederick G. Lewis, vice-president and director of George B. Carpenter & Company, Chicago, died on October 29 at Wheaton, Ill., following a short illness.

James D. Robertson, president of the **Warren Tool and Forge Company**, Warren, Ohio, died on October 28 at Pittsburgh, Pa., following a stroke of apoplexy.

Trade Publications

THE FLOW METER.—The new Brown electric flow meter, in which the inductance bridge principle is used, is described and illustrated in a four-page folder issued by the Brown Instrument Company, Philadelphia, Pa.

MOTORIZED POWER.—A 12-page bulletin illustrating G-E motorized power (electric locomotives, electric tractors and trucks, cranes and handling equipment) in actual use, has been issued by the General Electric Company, Schenectady, N. Y.

LO-HED HOISTS.—The American Engineering Company, Philadelphia, Pa., has prepared a 42-page catalogue descriptive of the Lo-Hed electric hoist. The wide range of lifting and handling conditions under which the hoist operates is shown in numerous illustrations.

RIVETERS.—Hanna riveted cars and locomotives and steel bridges are illustrated in a 12-page booklet prepared by the Hanna Engineering Works, 1765 Elston avenue, Chicago. A brief description of the different types of Hanna riveter is also contained in the booklet.

UNIT HEATERS.—The various types and applications of Buffalo unit heaters are described in catalogue No. 466 issued by the Buffalo Forge Company, Buffalo, N. Y. These heaters are adapted for use in warehouses, freight sheds, depots, machine shops, foundries and other industrial plants.

GENUINE WROUGHT IRON PIPE.—The Reading Iron Company, Reading, Pa., has recently issued a 16-page bulletin, designated No. 2, which contains a number of interesting Reading pipe service records. The other features of the bulletin are two articles on "Two ways to be sure of genuine wrought iron pipe" and "From puddling furnace to installation."

MULTI-SERVICE BALLAST CARS.—In a four-page circular devoted to Multi-service ballast cars, the Enterprise Railway Equipment Company, Chicago, describes the advantages of this type of car for handling ballast, cinders, coal, gravel, sand, ore and other materials. Four methods of discharging the load to the center of the track, both sides, center and one side, and center and both sides, are illustrated. Structural features of the Multi-service ballast cars also are outlined in detail.

ROLLING STEEL DOORS.—A 32-page catalog has just been issued by the Cornell Iron Works, Inc., Long Island City, N. Y., which illustrates and describes the various types of steel rolling doors and labeled Underwriters' rolling fire doors manufactured by this company. The catalog includes also complete construction details and specifications for these doors as well as their various types of operating equipment, and in addition contains a large number of actual installation views.

THE SURGEONS of the Pennsylvania held their annual meeting at the Bellevue-Stratford Hotel, Philadelphia, on October 22 and 23 of last week, Dr. John B. Walker of New York City presiding. The number of these railroad surgeons—emergency men—is upward of 675, scattered through 13 states. In addition to these, the railroad company employs 175 medical examiners on its regular full time payroll, these having important duties in connection with the Voluntary Relief Association.

THE CHICAGO, BURLINGTON & QUINCY has increased its passenger service between Chicago and St. Paul-Minneapolis by adding a new train known as the Commercial Limited and changing the schedules of Trains 47 and 48 which will hereafter be known as the Black Hawk. Train 47 now leaves Chicago at 6:30 p.m. as previously, but arrives at Minneapolis at 7:35 a.m. instead of 7:50 a.m. Train 48 now leaves Minneapolis at 8:05 p.m. instead of 7:20 p.m. and arrives in Chicago at 8:40 a.m. instead of 7:55 a.m. The Commercial Limited leaves Chicago at 8:45 p.m. and arrives in Minneapolis at 8:55 a.m. Returning, it leaves Minneapolis at 6:20 p.m. and arrives in Chicago at 6:55 a.m.

Railway Construction

ARKANSAS & LOUISIANA MISSOURI.—The construction of a combined freight and passenger station at Bastrop, La., is contemplated, with track changes and added yard facilities to be performed by company forces, estimated to cost $37,500.

ATCHISON, TOPEKA & SANTA FE.—This company contemplates the construction of a water treating plant at Blackwell, Okla., including a 24-ft. by 60-ft. treating tank.

ATLANTIC COAST LINE.—A contract has been awarded to the Ogle Construction Company, Chicago, for the construction of a 500-ton automatic electric reinforced concrete coaling station at Thomasville, Ga.

CHESAPEAKE & HOCKING.—Contracts for the construction of the eight sections of this new line, a subsidiary of the Chesapeake & Ohio, between Valley Crossing, Ohio, and Gregg, 63 miles, at an estimated cost of $12,371,100, have been awarded as follows: (1) Fritz, Rumer Company, Columbus, Ohio, (2) Ferguson & Edmondson Company, Pittsburgh, Pa., (3) Sterman-Dillard Company, (4) Dominion Construction Company, (5) and (6) Walsh Construction Company, Davenport, Iowa, (7) A. Guthrie & Co., St. Paul, Minn., (8) H. W. Nelson, Chicago.

CHESAPEAKE & OHIO.—This company has awarded a contract to Haley, Chisholm & Morris, Charlotteville, Va., for an eastbound passing siding at Thurmond,. W. Va., estimated to cost $35,000.

ILLINOIS CENTRAL.—This company has asked permission of the New Orleans City Council for authority to proceed with the construction of a passenger terminal to be located between Willow, Rampart, Calliope streets and Howard avenue, New Orleans, La., to cost about $4,000,000. The station building is expected to be four stories high with dimensions of 400 ft. by 100 ft. to accommodate 14 station tracks. It is estimated that $3,000,000 will be required to construct the building with $1,000,000 additional for track rearrangement and other facilities.

JACKSON & EASTERN.—This company has applied to the Interstate Commerce Commission for an extension of time from December 31, 1926, to December 31, 1927, during which it is required to complete the construction of the line from Lena to Jackson, Miss.

NORFOLK & WESTERN.—This company has awarded a contract to the Virginia Bridge & Iron Company, Roanoke, Va., for repairs to a bridge, estimated to cost $36,000.

NORTHERN PACIFIC.—A steel and concrete highway subway will be constructed in conjunction with the Great Northern near Coon Creek, Minn., the county bearing one half the total expense of $50,900, and the railroads the remainder.

ST. LOUIS-SAN FRANCISCO.—A contract has been let to the Ogle Construction Company, Chicago, for the installation of a two-track electric cinder unit at Kansas City, Mo.

TEXAS & PACIFIC.—A contract has been awarded to the Ware Company, El Paso, Tex., for the construction of a 16-stall roundhouse, steel frame erecting machine shop, blacksmith and boiler shops, brick power house, brick storeroom and office building and several minor structures at Gouldsboro, La., estimated to cost $300,000.

UNION PACIFIC.—Company forces will remodel the crowding pens and loading chutes at the West Stock Yards at Valley, Neb., providing concrete floors and roofs, lowering the tracks to place car floor level with floor of pens, providing inclines to upper decks and laying additional tracks at an estimated expenditure of $52,000. Company forces will also lay a mile of additional side track, relocate 2,500 ft. of side track, and 7,000 ft. of main track, including the installation of necessary bridges at Loring, Kan., at a cost of $39,000.

Railway Financial News

ALABAMA, TENNESSEE & NORTHERN.—*Six Months Guaranty.*—The Interstate Commerce Commission has issued a certificate to the Treasury stating the amount of this company's guaranty for the six months' period of 1920 following the termination of federal control as $29,593, and that the company has been overpaid by $32,806 in advance and partial payments.

CENTRAL OF NEW JERSEY.—*Tentative Valuation.*—This company, in its brief filed with the Interstate Commerce Commission on its protest against the tentative valuation of its properties, claims a final value of $234,996,653, as against $162,659,531 stated in the tentative report, as of 1918. The brief states that it has been prepared with a view to avoiding a review of the many long-standing controversies as to principles and methods to be employed in railroad valuation, and to deal only with the substantial issues of fact peculiar to the valuation of this carrier's property, but that "even if all questions of principle and law were waived, yet the omissions and understatements in this tentative valuation are so numerous and substantial that an upward revision of the Bureau's recommendations is unescapable, and that such revision should be reflected in the commission's final valuation."

Executive Changes.—See article on another page of this issue entitled, "W. G. Besler Elected Chairman."

CHESAPEAKE & OHIO.—This company has applied to the Interstate Commerce Commission for authority to acquire control of the Chesapeake & Hocking, which was recently authorized by the commission to build a line from Gregg to Valley Crossing, Ohio, 63 miles. The Chesapeake & Hocking has also applied for authority to issue $70,000 of common stock, all of which except directors' shares to be issued to the C. & O., and $12,500 of 6 per cent promissory notes to the C. & O., in payment for funds to be advanced.

CHICAGO, MILWAUKEE & ST. PAUL.—*Writ to Obstruct Sale Denied.*—The circuit court of appeals at Chicago on October 28 denied a petition filed by Nathan Miller, former governor of New York, on behalf of the minority interests for a writ of mandamus to obstruct the public sale of this railroad at Butte, Mont., on November 22. The minority interests, headed by Edwin C. Jameson, had asked for indefinite delay of the sale and an upset price of $250,000,000 instead of the figure of $122,500,000 fixed by Federal Judge James H. Wilkerson. The minority group which was shown to represent only 2 per cent of the total bonds of the company, charged fraud and conspiracy in the acquisition of the Chicago, Terre Haute & Southeastern and the Chicago, Milwaukee & Gary, although these charges were later withdrawn. Under the terms of Judge Wilkerson's decree the hearing for the confirmation of the sale will be held at Chicago on December 13 and immediately following the granting of approval the reorganization managers will appeal to the Interstate Commerce Commission for sanction of the new securities to be issued.

DENVER & RIO GRANDE WESTERN.—*Acquisition.*—This company has applied to the Interstate Commerce Commission for authority to purchase and operate the Goshen Valley, extending from Pearl Junction to Dividend, and from Flora Junction to Iron King, Utah, 10.5 miles.

FRANKFORT & CINCINNATI.—*Sale.*—Sale of this railroad, which was placed in receivership on October 24, 1925, has been ordered by the Franklin Circuit Court of Kentucky. At the same time the court ordered cancellation of the 99-year lease held by the Louisville & Nashville on the Frankfort terminal, the latter railroad's only means of entrance into Frankfort, Ky., on the ground that when it was procured in 1903 it was done by virtue of an unlawful stock ownership. The Louisville & Nashville is indebted to the Frankfort & Cincinnati for rentals for the past 20 years, aggregating $64,000, the court declared. Betterments made on the Frankfort terminal by the Louisville & Nashville, including a freight house, engine house and sidings must revert to the terminal railroad, the court held because

Judge Ben G. Williams was not convinced "that the improvements were made upon a good faith belief of ownership." At the time of ordering the sale of the line Judge Williams declared valid a $160,000 bond issue authorized by the owners in 1901.

GEORGIA, SOUTHERN & FLORIDA.—*Dividends.*—The directors on Tuesday declared an initial dividend of 5 per cent on the common stock and semi-annual dividends of 2½ per cent each on the first and second preferred shares. All dividends are payable November 26 to stockholders of record November 12.

GULF, MOBILE & NORTHERN.—*Bonds.*—The Interstate Commerce Commission has granted this company authority to procure authentication and delivery of $500,000 first mortgage gold bonds of 1950 to be held subject to further order of the commission.

JACKSONVILLE, GAINESVILLE & GULF.—*Acquisition.*—This company, organized in the interest of the Seaboard Air Line, has applied to the Interstate Commerce Commission for authority to purchase the property of the Tampa & Jacksonville from a reorganization committee of security holders. The line extends from Sampson City to Emathala, Fla., 56 miles, and connects with the Seaboard at Gainesville. It is proposed to finance the purchase by the issue to the committee of $450,000 of first mortgage 6 per cent bonds of the applicant, to be guaranteed by the Seaboard, and of $605,000 of capital stock. The Seaboard has also applied for authority to acquire control of the new company by purchase of $605,000 of stock and to guarantee the bonds.

KNOXVILLE & CAROLINA.—*Court sale.*—This railroad, owning a line between Knoxville, Tenn., and Sevierville, 30 miles, was purchased on October 18 at a court sale for $75,000 by C. Boice, W. J. Parks and J. W. Bell, of Newport, Tenn., officers of the Tennessee & North Carolina. The charter of the Smoky Mountain is included in the purchase, and it is reported that a connection is to be made between this railroad and the Knoxville & Carolina.

MINERAL RANGE.—*Abandonment.*—The Hancock & Calumet and the Mineral Range, lessee, have been authorized to abandon that portion of the main line of the Hancock & Calumet from Kearsarge, Mich., to Ahmeek, 2.1 miles, and connecting branch lines to copper mines and stamp mills, 5.06 miles. The reason for the abandonment is that the Calumet & Hecla Consolidated Copper Company which owns the mines has built the Keweenaw Railroad which practically parallels the main line trackage proposed to be abandoned. The construction of this line by the copper company has taken away about 95 per cent of the traffic.

MISSOURI PACIFIC.—*Bonds.*—The Interstate Commerce Commission has granted this company authority to procure authentication and delivery of $20,345,000 first and refunding mortgage 5 per cent gold bonds, series A, and to pledge and re-pledge them from time to time as collateral security for short term notes.

NEW YORK CENTRAL.—*Injunction to Restrain Michigan Central Lease Refused.*—The United States Circuit Court of Appeals handed down an opinion in Cincinnati on November 3 affirming the decree of District Judge C. W. Sessions in Detroit dismissing the application of the Continental Securities Company of Chicago, a minority stockholder for an injunction.

The minority stockholders of both roads contended that the lease would be a fraud on them and a violation of the anti-trust laws. They further charged that the common management of the Michigan Central and the Lake Shore by the New York Central constituted a restraint of competition in interstate commerce.

In its opinion the court said:

"It sufficiently appears that in exercising control over the Michigan Central, the majority stockholder has not been moved by an intention to depress the value of the minority stock or unfairly to benefit the Lake Shore lines at the expense of the Michigan Central. Upon the representation that the Michigan Central was about to be leased to the New York Central for 99 years, and that thereby there was danger that the subject matter of this suit might, in a sense, disappear from existence, we enjoined the New York Central from voting its stock at the Michigan Central meeting in favor of such lease until there should be opportunity to hear and decide this appeal. Since the principal issue is now decided in favor of the defendant, there is no further occasion for collaterally projecting the subject matter, and that injunction will not be continued."

NEW YORK, NEW HAVEN & HARTFORD.—*Acquisition.*—This company has applied to the Interstate Commerce Commission for authority for the acquisition and operation of the Central New England, including the operation of its leased line, the Hartford & Connecticut Western, and also of the lines of the Harlem River & Port Chester, and also for authority to assume obligation and liability in respect of the securities of the Central New England and its leased line. These properties are now in common control and form a part of the New Haven system, but the application states that "their unification for single ownership and operation will result in substantial economies with respect to management and operation." The companies merged will operate 2,197 miles of road. Under the laws of New York and Connecticut, the application says, the three companies have been merged, subject to the approval of the Public Service Commission of New York and of the Public Utilities Commission of Connecticut. Application for such approval has been made, and the company expects and believes that the applications will be approved. Under the laws of Massachusetts and Rhode Island, it says, approval by the state commission is not required. The outstanding capital stock of the Central New England and the Harlem River & Port Chester, now pledged under the New Haven's first and refunding mortgage, will, under the terms of the merger, be returned to the New Haven and retired.

Equipment Trust.—This company, in applying to the Interstate Commerce Commission for authority for an issue of $4,995,000 of 4½ per cent equipment trust certificates, says that no definite arrangements have been made for their sale and requests an oral hearing in order to present evidence to the commission as to the proper terms of disposition. The certificates are to be used in connection with the purchase of 45 multiple-unit passenger train motor cars, 37 trailer cars, 6 electric switching locomotives, 5 gasoline-electric rail cars, 6 steel dining cars, 6 electric passenger locomotives, 10 steam freight locomotives.

PENNSYLVANIA.—*Abandonment.*—The Pennsylvania, Ohio & Detroit and the Pennsylvania, lessee, have been authorized by the Interstate Commerce Commission to abandon Apple Creek branch from Kramore, Ohio, to West Lebanon, 9.5 miles. The branch is carrying so little traffic that it is being operated at a loss.

Average Price of Stocks and Bonds

	Nov. 3	Last Week	Last Year
Average price of 20 representative railway stocks	100.39	99.48	90.45
Average price of 20 representative railway bonds	97.32	96.48	91.63

Dividends Declared

Central of New Jersey.—2 per cent, quarterly, payable November 15 to holders of record November 8.

Delaware & Hudson.—$2.25, quarterly, payable December 20 to holders of record November 27.

Hudson & Manhattan.—Common, 1¼ per cent, semi-annually, payable December 1 to holders of record November 16.

Lehigh Coal & Navigation.—2 per cent, quarterly; extra, 2 per cent; both payable November 30 to holders of record October 30.

Maine Central.—Preferred, $125, quarterly, payable December 1 to holders of record November 15; common, $1.00, payable December 15 to holders of record December 1.

Midland Valley.—Preferred, 2½ per cent, semi-annually, payable December 1 to holders of record November 20.

Pennsylvania.—1¾ per cent, quarterly, payable November 30 to holders of record November 1.

Reading Company.—1st preferred, 1 per cent, quarterly, payable December 9 to holders of record November 23.

Valuation Reports

The Interstate Commerce Commission has issued final or tentative valuation reports stating the final value for rate-making purposes of the property owned and used for common-carrier purposes, as of the respective valuation dates, as follows:

FINAL REPORTS

Bartlett Western	$240,000	1918
Beaver Dam	1,240	1916
Birmingham, Selma & Mobile	60,020	1918
Cassville & Western	38,200	1918
Central Union Depot & Railway of Cincinnati	670,808	1915
Columbus & St. Andrews	229,109	1917
Grasse River	224,510	1918
Lake Superior & Ishpeming	4,831,350	1916
Louisville & Jeffersonville Bridge Company	2,977,210	1915
Missouri Southern	813,640	1914
Wyandotte Southern	100,953	1918

TENTATIVE REPORTS

Pittsburgh, Shawmut & Northern	$7,285,000	1919
Sussex	1,075,000	1918

Railway Officers

Executive

H. E. Hale, engineer, Eastern group, Presidents' Conference Committee on Federal Valuation of Railroads, with headquarters at New York, has been elected vice-chairman.

Andrew Stevenson has retired as president of the Jacksonville & Havana, with headquarters at Chicago. He was born on June 28, 1879, at Bayonne, N. J., and was educated in the public schools and the Iowa Business College at Des Moines, Iowa. He began railway service in 1890 with the Wabash at Des Moines, serving later in various capacities with the Chicago, Burlington & Quincy and the Chicago & Eastern Illinois. From 1898 to 1905 he was chief rate clerk for the Western Passenger Association, Chicago. After acting as state manager of an insurance company for the next two years he became vice-president and general manager of the Iowa Light & Traction Company and general manager of the Iowa Construction Company. He became president and treasurer of the Jacksonville & Havana upon its organization in 1925, retiring from his duties as treasurer shortly before his retirement as president. Mr. Stevenson was the founder of a chain of banks in Alaska and author of the Stevenson plan for consolidation of the railroads of the United States under the Transportation Act of 1920.

Arthur Hamilton, who has been elected vice-president in charge of freight traffic of the Central of New Jersey, was born on February 27, 1865, at Bethel, Ill., and was educated in the public schools. He entered railway service on September 1, 1882, as a telegraph operator and station agent on the Chicago, Burlington & Quincy, and in September, 1887, he was promoted to train dispatcher. In March, 1889, he became freight agent. In October, 1892, he was promoted to traveling auditor and in May, 1896, he left the Burlington to go with the Union Elevator Company at East St. Louis, Ill., as freight agent and manager. In March, 1903, he was appointed assistant superintendent of terminals at St. Louis, Mo., and in December of the following year was promoted to superintendent of terminals. A year later he was appointed superintendent of the Missouri & Illinois Bridge & Belt Railway at Alton, Ill. On May 1, 1906, he went with the Central of New Jersey as a general agent, with headquarters at Newark, N. J., and in June, 1909, was promoted to general freight agent at New York. In January, 1924, Mr. Hamilton was appointed freight traffic manager at New York, which position he was holding at the time of his recent election as vice-president in charge of freight traffic.

Arthur Hamilton

Operating

D. Leer has been appointed supervising agent on the Florida East Coast, with headquarters at St. Augustine, Fla.

G. F. Malone, superintendent of car service on the Baltimore & Ohio, with headquarters at Baltimore, Md., has been appointed to a similar position on the Cincinnati, Indianapolis & Western, with the same headquarters.

T. S. Stewart has been appointed trainmaster of the Galveston, Harrisburg & San Antonio, with headquarters at Del Rio, Tex., succeeding **C. A. Maxwell,** resigned.

H. H. Tisdale, trainmaster of the Atchison, Topeka & Santa Fe, with headquarters at Fresno, Calif., has been transferred to Needless, Calif., succeeding **A. R. Wood.**

F. F. Clayton, car service agent on the Los Angeles & Salt Lake, with headquarters at Los Angeles, Cal., has been appointed superintendent of car service, with the same headquarters, and the former position has been abolished.

T. S. Kinnersley, car service agent on the Oregon Short Line, with headquarters at Salt Lake City, Utah, has been appointed superintendent of car service, with the same headquarters, and the position of car service agent has been abolished.

D. M. Driscoll, assistant superintendent on the Lake Superior division of the Northern Pacific, with headquarters at Duluth, Minn., has been promoted to assistant to the general superintendent of the Eastern division, with headquarters at St. Paul, Minn.

C. B. Packer, assistant superintendent of transportation of the Seaboard Air Line, with headquarters at Savannah, Ga., has been promoted to superintendent of car service. **W. E. Rodwell,** assistant to superintendent of transportation at Savannah, Ga., has been promoted to assistant superintendent of transportation.

E. E. Wheeler, trainmaster on the Tucson division of the Southern Pacific, with headquarters at Phoenix, Ariz., has been promoted to superintendent of a newly created division, 211 miles long, covering the new main line between Picacho, Ariz., and Wellton, and including the Winkelman-Christmas branch. Headquarters will be at Phoenix.

E. R. Anthony, assistant superintendent of the Coast division of the Southern Pacific, with headquarters at San Francisco, Cal., has been promoted to superintendent of the Coast division, with the same headquarters, succeeding **F. M. Worthington,** retired on pension. **J. J. Jordan,** assistant superintendent, with headquarters at San Francisco, has been transferred to the Coast division, succeeding Mr. Anthony.

H. B. Griffith has been appointed trainmaster, North End, of the Alabama Great Southern (part of the Southern), with headquarters at Birmingham, Ala., succeeding **T. O. Crane,** who has been appointed trainmaster, East End, Birmingham division, of the Southern, with headquarters at Birmingham, Ala., succeeding **G. W. Adams,** who has been appointed trainmaster on the Atlanta division (Atlanta to Macon), with headquarters at Atlanta, Ga., succeeding Mr. Griffith.

E. B. Hebert, trainmaster of the Atchison, Topeka & Santa Fe, with headquarters at Needles, Cal., has been appointed transportation inspector, with headquarters at Fresno, Cal. **A. E. Hutchinson,** general safety inspector of the Gulf, Colorado & Santa Fe, has been appointed inspector of transportation, station and yard service, a newly created position, with headquarters at Galveston, Tex., and will be succeeded as general safety inspector by **G. H. Weber,** secretary to the vice-president and general manager.

A. H. Webb, superintendent of the Wichita division of the Missouri Pacific, with headquarters at Wichita, Kan., has been appointed special assistant to the vice-president and general manager, with the same headquarters, and has been succeeded by **O. M. Stevens,** trainmaster of the Atchison and St. Joseph districts of the Omaha division, with headquarters at Atchison, Kan. **G. W. Raney** has succeeded Mr. Stevens as trainmaster at Atchison. **W. P. Hayes,** trainmaster of the DeSoto and Potosi districts of the Missouri division, with headquarters at Poplar Bluff, Mo., has been promoted to superintendent of the Little Rock division, with headquarters at McGehee, Ark., replacing **R. A. Brimm,** resigned. Mr. Hayes has been succeeded by **G. R. Mabie,** who has been transferred from the Paragould district, between Knobel and Wynne, including Wynne yard and Memphis district, with headquarters at Wynne, Ark., and who in turn

has been replaced by **J. T. Watson,** trainmaster of the Chester and Cairo districts of the Illinois division, with headquarters at Illmo, Mo. **B. H. Layne** has been appointed trainmaster of all districts of the Central Kansas division, with headquarters at Osawatomie, Kan., succeeding **B. C. Murphy,** who has been transferred to Illmo to replace Mr. Watson. **J. R. Coulter,** trainmaster of the Ferriday and Swartz districts of the Louisiana division, with headquarters at Ferriday, La., has been transferred to the Little Rock division, succeeding Mr. Layne. Mr. Coulter has been in turn replaced by **C. A. Forbes,** whose place as trainmaster of the Van Buren, Altus and Clarksville districts of the Central division, with headquarters at Van Buren, Ark., has been filled by **E. E. Buckminister. L. F. Ginochio** has replaced Mr. Buckminister as trainmaster of the McGehee, Warren and Hamburg districts and McGehee yard of the Little Rock division at McGehee, Ark.

Traffic

H. L. Hill has been appointed general agent of the Seaboard Air Line, with headquarters at Havana, Cuba.

E. F. Wonder, Jr., has been appointed general agent on the Lehigh Valley, with headquarters at Chicago, Ill. The position of city freight agent has been abolishd.

A. J. Gray, assistant general freight agent of the Canadian National, with headquarters at St. John, N. B., has been appointed general freight agent, with headquarters at Moncton, N. B.

E. H. Spangenberg, New England freight agent of the New York, Chicago & St. Louis at Boston, has been appointed eastern freight agent, with headquarters at New York City, succeeding **J. W. Johnson,** resigned.

Mechanical

Myron Robbins, road foreman of engines on the New York, Chicago & St. Louis, with headquarters at Ft. Wayne, Ind., has been promoted to supervisor of locomotive and fuel performance, with headquarters at Cleveland, Ohio, succeeding **C. E. Trotter,** resigned.

L. C. Shults, has been appointed master mechanic on the Southern, with headquarters at Atlanta, Ga. **C. G. Goff** has been appointed master mechanic at Birmingham, Ala., and **H. C. Trexler** has been appointed master mechanic at Somerset, Ky. **A. M. Lawhon** has been appointed master mechanic at South Richmond, Va., succeeding Mr. Goff, and **O. Small** has been appointed master mechanic at Alexandria, Va., succeeding Mr. Lawhon.

W. R. Lye, district superintendent of motive power on the New York Central, with headquarters at Elkhart, Ind., has been appointed to a similar position at Collinwood, Ohio, with jurisdiction over the Third district, succeeding **O. M. Foster,** who is retiring at his own request. **F. F. McCarthy** has been appointed district superintendent of motive power, with headquarters at Elkhart, Ind., with jurisdiction over the Fourth district, succeeding Mr. Lye.

Engineering, Maintenance of Way and Signaling

D. T. Daily has been appointed division engineer on the East Florida division of the Seaboard Air Line, with headquarters at West Palm Beach, Fla., succeeding **H. O. Kaigler,** transferred on account of health.

William A. Bercaw, who has been promoted to district engineer of maintenance of way on the Chicago, Burlington & Quincy, with headquarters at St. Louis, Mo., was born on October 25, 1876, at Bethlehem, Iowa, and entered railway service in July, 1897, as a section laborer on the Burlington at Promise City, Iowa. Four years later he was promoted to section foreman at Pleasanton, Iowa, and in October, 1901, he was transferred to the Shenandoah branch, with headquarters at New Market, Iowa, where he remained until December, 1906, when he was transferred to train service as a brakeman at Sheridan, Wyo. In April, 1907, he returned to New Market as a section foreman and in July, 1913, he was transferred to Macon, Mo., on the Brookfield division, where he remained until the following year when he was promoted to extra gang foreman. In September, 1915, he was transferred to Chillicothe, Mo., and in July, 1918, he was promoted to roadmaster on the Beardstown division, with headquarters at Herrin, Ill., serving later as roadmaster at Beardstown, Ill., and at Centralia, Ill. In September, 1925, he was transferred to the Brookfield division as roadmaster with headquarters at Brookfield, Mo., a position he held until his promotion to district engineer of maintenance of way.

Purchases and Stores

N. J. Boughton, mechanical engineer of the Missouri-Kansas-Texas, with headquarters at Parsons, Kan., has been promoted to engineer of tests, with the same headquarters, succeeding **C. L. Buckingham,** deceased.

Frederick I. Plechner, assistant purchasing agent on the Great Northern, with headquarters at St. Paul, Minn., who has been promoted to purchasing agent, with the same headquarters, succeeding Fred A. Bushnell, resigned, was born on February 8, 1871, at St. Paul. He graduated from the St. Paul High School in the class of 1889. Prior to entering railway service Mr. Plechner was traveling representative in Oregon, Washington and Idaho for a wholesale and manufacturing firm, with headquarters at St. Paul. His connection with railroad work began on December 1, 1913, when he was appointed assistant purchasing agent on the Great Northern at St. Paul. He remained in this position until October 15, 1926, when he was promoted to purchasing agent with jurisdiction over the entire purchasing and stores department of the Great Northern and with the same headquarters.

Frederick I. Plechner

Obituary

A. W. Perley, fuel supervisor of the Oregon-Washington Railroad & Navigation, died on October 28 in a hospital at Portland, Ore.

Frank L. Bacon, who retired as general agent in the freight department of the Chicago, St. Paul, Minneapolis & Omaha at St. Paul, Minn., in 1925, died on October 29, at Hudson, Wis.

O. B. Hollingsworth, superintendent of the Cumberland Valley division of the Louisville & Nashville, died at his home in Middlesboro, Ky., on October 26, following an attack of heart disease.

Dr. William Seward Webb, who was president of the Wagner Palace Car Company until its merger with the Pullman Company, died at his home near Burlington, Vt., on October 29. Dr. Webb was born in New York on January 31, 1851, and studied medicine at Columbia University and in Europe. He soon left the practice of medicine, however, to engage in finance. His first railroad connection was the presidency of the Wagner Palace Car Company which he assumed in 1883. He was also the president of the Fulton Chain Railway, the Fulton Navigation Company, the Racquette Lake Transportation Company and the Mohawk & Malone. He also served as a director in several other railroad companies, including the Rutland and the Lake Shore.